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LAW OFFICES  
**KANIA, LINDNER, LASAK AND FEENEY**  
FIFTH FLOOR  
TWO BALA PLAZA  
333 CITY LINE AVENUE  
BALA CYNWYD, PA. 19004  
(610) 667-3240  
FAX (610) 668-9676

RECEIVED  
(Reg)

September 9, 2002

**RECEIVED**  
SEP 11 2002  
PRP INFO SECTION

Brian Nishitani, Esquire  
Senior Assistant Regional Counsel  
U.S. Environmental Protection Agency, Region III  
1650 Arch Street  
Philadelphia, PA 19103-2029

**RE: Folcroft Landfill/Lower Darby Creek Area Site  
Piasecki Aircraft Corporation  
April 17, 2002 Response to EPA Information Request**

Dear Mr. Nishitani:

Enclosed please find the response of Piasecki Aircraft Corporation in the above matter.

Very truly yours,

KANIA, LINDNER, LASAK AND FEENEY

BY: John Lasak  
John Lasak

JL:afm

cc: Frederick W. Piasecki  
John W. Piasecki  
Richard J. Dulcey



## MEMORANDUM

TO: Brian M. Nishitani  
Senior Assistant Regional Counsel  
Environmental Protection Agency

FROM: Piasecki Aircraft Corporation

DATE: September 9, 2002

RE: Response to EPA Request for Information dated April 17, 2002

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This memorandum is organized to respond to Enclosure F to the EPA requests for information dated April 17, 2002. Paragraph numbers of responses are keyed to corresponding paragraph numbers of questions.

1. Piasecki Aircraft Corporation  
West Terminus of Second Street  
Essington, PA 19029  
(610) 521-5700
  - a. Piasecki Aircraft Corporation was formed as a Pennsylvania corporation on June 20, 1955.
  - b. See 1(a) above.
  - c. There is no parent corporation of Piasecki Aircraft Corporation. There is no subsidiary of Piasecki Aircraft Corporation.
2. The Company currently engages in engineering design and development of a vector thrust ducted propeller ("VTDP") prototype helicopter for the U.S. Navy. This type of compound helicopter has the stub wings of an airplane and a special ducted rear rotor.

From 1958 to 1976, the Company engaged in engineering design and development of prototype vertical lift aircraft, primarily for U.S. military agencies. These included a "Sea Bat", an unmanned omni-directional drone vertical take off/landing (VTOL) craft flight tested in October 1958 and the "Airgeep", an operator driven VTOL, with a first version flight tested in 1958 and a second version flight tested in 1962. The Compound Helicopter featuring stub wings and a ducted propeller was completed and flight tested in 1962. During the 1960's and 1970's, the Company developed engineering concepts for combining helicopters for heavy lifts systems.

The operations that were conducted at the Philadelphia airport location (long gray shed - (see below) from 1958 to 1970 primarily concentrated on engineering services as well as the one time "proof of concept" prototype assembly of the following small aircraft:



- 
1. VZ-8 ("SeaGeep")
  2. VZ-8P ("AirGeep")
  3. 16H-1 ("Pathfinder 1")
  4. 16H-1A ("Pathfinder 2")
  5. PA-4 (UAV) ("Sea Bat")

In 1980, the Company entered into a contract with the U.S. Navy to develop the Heli Stat, a hybrid helicopter/aerostat designed to lift and transport ultra heavy loads for the US Forest Service. This vehicle was completed in 1986, in Lakehurst, New Jersey. After conclusion of that Project, the principal activity of the Company was design and engineering for the fabrication of a ducted propeller for use on existing helicopters. The VTDP project is still under way.

At no time has Piasecki Aircraft Corporation conducted aircraft production other than development of single "proof of concept" prototypes as described above. As can be seen from Table 1, Piasecki Aircraft Corporation for the period of 1958 to 1976 varied in size and activity. The period of 1958 to 1970 included building of single prototypes of each model, and basic flight testing at the Philadelphia International Airport.

From 1970 to 1976, the Company moved, and generally into smaller quarters as its operations were scaled down because of adverse business conditions. Piasecki Aircraft Corporation's relocation to smaller offices resulted in a shift from engineering services and prototype assembly to engineering services limited to engineering design and simple small scale parts "proof of concept" testing.

Due to several historical fires, Piasecki Aircraft Corporation does not have comprehensive records on waste management practices during the period of 1958 to 1976. Based upon technical interviews of several past employees it is understood that for the period of 1958 to 1976, Piasecki Aircraft Corporation generated wastes equivalent to the level of modern Conditionally Exempt Small Quantity Hazardous Waste Generator (CESQG).

Because of reductions in its business, Piasecki Aircraft Corporation has employed substantially less than 100 employees for many years and believes the wastes referenced on the two Tri-County Hauling tickets may have been municipal waste as described below in Response 8. Therefore, Piasecki Aircraft Corporation may be eligible for exemption from CERCLA liability pursuant to the Small Business Liability Relief and Bronwfields Revitalization Act.



Table 1  
PIASECKI AIRCRAFT CORPORATION  
(LEASED PREMISES FROM 1958 to 1986)

DATE (APPROX)	LOCATION/ ADDRESS	SPACE DESCRIPTION/SIZE (SQ FT)				DESCRIPTION OF OPERATIONS
		Office	Machine Shop	Dry Storage	Hangar	
1958 – 1970	Philadelphia International Airport Island Avenue Philadelphia, PA.  (Long Gray Shed)	15,000	25,000	NONE	6,400	Engineering design, Single “proof of concept” prototype assembly and Flight Test.
1970 – 1973	Philadelphia International Airport Hangar #4 Island Avenue Philadelphia, PA. (Overseas Terminal)	6,000	NONE	3,000	1,600	Engineering Design Services
1973 – 1975	Sunray Building	8,000	NONE	6,000	N/A	Engineering Design Services
1975 – 1983	8415 Envoy Avenue Philadelphia, PA.	4,500	NONE	4,800	N/A	Engineering Design Services
1983 – 1985	Elmwood Avenue, East of Calcon Hook Road Sharon Hill, PA.	22,000	12,000	NONE	N/A	Engineering Design Services. Small component fabrication and assembly.
1986 – Present	West Terminus of Second Street Essington, PA. 19029	6,400	24,000	15,000	25,000	Engineering Design Services. Small component fabrication and assembly.



3. The living current or former employees of the Company having possible personal knowledge of operations and waste disposal practices between 1958 and 1976 at the facilities in the Philadelphia Pennsylvania area are listed below.

CURRENT EMPLOYEES	POSITION	ADDRESS/PHONE NUMBER
F.N. Piasecki	President through entire period	c/o Piasecki Aircraft Second Street West P.O. Box 360 Essington, PA 19029-0306 (610) 521-5700
Fredrick W. Piasecki	Currently Vice President, intern in 1970's	c/o Piasecki Aircraft (see above)
FORMER EMPLOYEES	POSITION	ADDRESS/PHONE NUMBER
Don Meyers	Vice President Engineering (1955-1980's)	[REDACTED]
Joe Cutry	Director of Quality Control 1958-1960	[REDACTED]
George Kocyan	Engineering Consultant in 1970's	[REDACTED]
S. A. Atkins	Director of Flight Testing (1959 - 1969)	[REDACTED]

Independent interviews were conducted by Environmental Resources Management (ERM) of these former employees identified by Piasecki Aircraft Corporation. Interviews were conducted with Messrs. Meyers, Cutry, Kocyan, and Atkins to research waste types and amounts generated during the period from 1958 to 1976, and waste disposal practices at Piasecki Aircraft Corporation. The information from those interviews was used to provide answers to the EPA questions to the extent possible.

- 4.(a) The Company was a public company from and after 1955 until September 29, 1992. After September 29, 1992, Mr. F.N. Piasecki became the sole shareholder. He had been the President of the Company since its formation in 1955 and remains President. He is presently 83 years old and disabled because of multiple strokes.
- (b) See answer 2 above.
- (c) The Company staff has been unable to find historical documentation regarding the handling and/or generation, storage, treatment, recycling, formulation, disposed or transportation of hazardous substances, hazardous waste, pollutant, contaminant or other waste applicable to the period from 1958 to 1976, except for the - Quality Control



Manual (the "Manual") dated September 25, 1974 which is attached hereto as Attachment 1. This Manual identifies the processes which the Company actively engaged in at that time.

Piasecki Aircraft Corporation moved to Envoy Avenue in 1975. A review of two Tri County Hauling tickets dated June 1975 coincides with the time of the Piasecki Aircraft Corporation move from the Sunray Building (engineering design services) to the Envoy Avenue location (engineering design services). It is possible that the Tri County hauling tickets are related to a one time disposal of excess papers, equipment and office materials for which there was insufficient space at the Envoy Avenue leased premises.

Due to two historical fires, Piasecki Aircraft Corporation does not have comprehensive records on waste management practices during the period of 1958 to 1976. Business records and some engineering drawings for the period 1955 to 1975 had been stored in two semi-trailers which caught fire in the year 1985, probably from vandalism, and the records contained therein were destroyed. In addition, fire from an adjacent tenancy in the year 1986 resulted in significant damage to Company records.

Based upon the interviews of several past employees conducted by ERM, it is understood that for the period of 1958 to 1970, Piasecki Aircraft Corporation generated small amounts of waste from small scale fabrication and processes. These waste types would have been minor amounts of used solvent (paint and lacquer thinners and cleaners), parts cleaner (acetone or methyl ethyl ketone was used for this purpose); steel and aluminum cutting residues (reportedly sold to a recycler), and water-based waste cutting fluids. All quantities were reported as very small. The only quantities reported in the interviews were of waste solvent, which reportedly was about two drums of waste/year and these wastes were stored separate from trash. The quantities would be equivalent to the level of a modern Conditionally Exempt Small Quantity Hazardous Waste Generator (CESQG).

- 5.(a) No records have been found which show how the Company documented handling, storage or disposed of waste during the period 1958 to 1976, except the Quality Control Manual which identifies processes for fabrication of parts and other operations onsite.
  - (b) No records have been found relating to permits, permit applications or correspondence with any agency or establishment regarding transportation or disposal of waste during the period 1958 to 1976.
  - (c) No contract or correspondence has been found between the Company and any company or entity regarding the transportation and disposal of such wastes.
6. The Material Safety Data Sheets for the hazardous substances currently in use at Piasecki Aircraft Corporation are included in Attachment 2 to this submittal. Piasecki Aircraft Corporation currently stores the chemicals in Attachment 2 in small quantity laboratory-scale amounts. These chemicals are stored onsite in small vials, quart containers, or in a few cases, single gallon containers. The only exception to this is the lubricating oil,



which is stored onsite in a single steel 55 gallon drum. The single 55 gallon drum of lubricating oil is used on an as-needed basis, and has been onsite for more than one year.

The hazardous materials listed in Attachment 2 are representative of the types and quantities of hazardous materials that would have been present during the 1958 to 1970 period, since present operations are similar to operations during that time.

From 1970 to 1983 Piasecki Aircraft Corporation would have had very little onsite chemical storage and usage, since the operations from 1970 to 1983 were restricted to Engineering Design Services. The Tri County hauling tickets mentioned in Section 4 were dated in 1975, during which time Piasecki Aircraft Corporation would have had very little onsite chemical storage and usage.

7. No specific historical records are available to detail wastes generated from Piasecki Aircraft Corporation. Piasecki Aircraft Corporation is currently operating under the Conditionally Exempt Small Quantity Generator Status (CESQG) for hazardous waste. Piasecki Aircraft Corporation currently generates approximately 200 pounds per year of used oil, and 40 pounds per year of used solvents from cleaning operations (Methyl Ethyl Ketone). This waste is currently stored in segregated labeled steel containers onsite. Piasecki Aircraft Corporation has in the recent past used Elk Environmental, Inc., Cyclechem, and SafetyKleen at various times for insured offsite approved disposal of this waste.

The wastes described above are representative of the types of waste and quantities of waste that would have been generated during the 1955 to 1970 period. Interviews with past employees indicate that for the period of 1955 to 1970 Piasecki Aircraft Corporation would have generated small quantities of hazardous waste similar to the present day generation rate. During the period of 1970 to 1983, Piasecki Aircraft Corporation would not have generated any hazardous waste, since the operations from 1970 to 1983 were restricted to Engineering Design Services. The Tri County hauling tickets mentioned in Section 4 were dated in 1975, during which time Piasecki Aircraft Corporation should not have generated any hazardous waste.

8. The only information Piasecki Aircraft has relating to the disposal company is based on information provided by EPA. This information shows that on one occasion, the Company utilized the services of Tri-County Hauling to dispose of waste from its offices in the Philadelphia area between 1958 and 1976. The Tri-County Hauling tickets show two loads. A review of the two Tri County Hauling tickets dated June 1975 coincides with the time of the Piasecki Aircraft Corporation move from the Sunray Building (engineering services) to the Envoy Avenue location (engineering services). It is likely that the hauling tickets are related to a one time disposal of excess papers, equipment and office materials for which there was insufficient space at the Envoy Avenue leased premises.

The two slips from Tri County Hauling show waste removed for Piasecki Aircraft Corporation. There is hand written notation "Piasecki Aircraft 2 demo conts @70.00



\$140.00." One slip has the name of the Company spelled incorrectly and is not signed by the customer and is undated. The Company cannot corroborate anything on that ticket; as to the other slip which was signed for the Company by Lou Ginter (now deceased) who was actively involved in managing the move to the Envoy Avenue premises:

- a) The person with whom the Company made such contract or arrangement is unknown;
  - b) The removal date was June 10, 1975 as per the one dated ticket;
  - c) The nature of the material is unknown, but appears to be solid waste, a container containing 20 yards of trash; it is possible the waste was generated by Company downsizing and moving into smaller quarters at about that time.
  - d) The annual quantity of such material is unknown;
  - e) The waste was contained in a "dino cont" per the ticket.
  - f) The location to which such material was transported is unknown.
  - g) The person selecting the location to which such material was transported for disposal is unknown.
  - h) The employees of Tri-County Hauling providing the service to the Company are unknown.
  - i) No billing data exists beyond the trip tickets provided to the Company by the EPA
9. (a) The company has no information indicating who may have disposed of waste at the Clearview, Folcroft sites and Folcroft Annex or other areas of the site.  
(b) Unknown  
(c) Unknown
10. The Company has no information indicating any disposal of its waste material at the Clearview, Folcroft and Folcroft Annex or other areas of the Site.
11. The Company does not have any record of itself or any other company or individual to spill or cause the release of any chemicals, hazardous substance and/or hazardous waste and/or non hazardous waste or any portion of the Clearview, Folcroft and Folcroft Annex or any other position of the Site.
12. Key Shop Personnel from 1958-1976
- 1958-1962 - Bill Collins – Purchasing Agent –  
address unknown



1956-1977 - Lou Ginter – Draftsman/Machinist – Deceased

1955-1966 - Gus Pasquerella – Shop Foreman – Deceased

1955-1980 - Myron Mykyta - Shop Employee - Deceased

Controllers from 1958 – 1976

E.G. Vanderlip – Deceased

Robert Kutzer – Deceased

Len Colavita – address unknown

13. No.

14. The Company has no such information.

15.a. 1. John Lasak, Esquire  
Kania, Lindner, Lasak and Feeney  
Suite 525, Two Bala Plaza  
Bala Cynwyd, PA 19004  
(610) 667-3240  
attorney for Company and

2. John W. Piasecki – V.P. Contracts for the Company, West Terminus, Second Street, Essington, PA 19029 (610) 521-5700

3. Frederick W. Piasecki – V.P. Engineering for the Company (See above address and phone number)

4. Darlene Fanty – Bookkeeper of the Company (See above address and phone number)

Floss Piazza – Personnel Chief of Company (See above address and phone number)

b. 1. John Lasak, Esquire – same as 15.a.1.

16. The Company does not have ledgers, purchase orders or summaries of purchase orders for periods prior to 1980. The Company has limited correspondence for periods prior to 1980. That correspondence does not appear to be relevant to the EPA investigation.

a. The current policy of the Company is to retain summaries of purchase orders and ledgers. Because of multiple Company moves, it appears that many of the oldest financial records were either lost, destroyed or trashed.



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- b. There is no record of methodical intentional file destruction. Business records and some engineering drawings for the period 1955 to 1975 had been stored in two semi-trailers which caught fire in the year 1985, probably from vandalism, and the records contained therein were destroyed. In addition, fire from an adjacent tenancy at a prior location in the year 1986 resulted in significant damage to Company records.
- c. Ledgers would have disclosed payments to trash handlers. Purchase orders and summaries of purchase orders would have shown payments to trash handlers. Purchase orders may have shown detail of the type of trash disposed.
- d.(i) For the period 1958 to 1976, documents requested by the EPA would have been produced by Shop personnel and accounting personnel; of these individuals Company knows of the continuing existence of only Joseph Cutry (Director of Quality Control).
- d.(ii) There was no person designated to be responsible for the old business records
- d.(iii) There is no record that any person was authorized to destroy the requested documents. The parties currently responsible for record generation would be Gordon Pry, the Plant Manager and Darlene Fanty, Bookkeeper.





PIASECKI AIRCRAFT  
C O R P O R A T I O N

# REPORT QCP-O

DATE: REVISED 25 SEPTEMBER 1974

TITLE
QUALITY CONTROL MANUAL

PREPARED: \_\_\_\_\_  
G. KOCYAN

APPROVED: D. N. Meyers  
D. N. MEYERS

CONTRACT NO.  
OR REFERENCE:

SUBJECT OF  
CONTRACT:

## REVISIONS

DATE	PAGES	REMARKS
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## FOREWORD

Piasecki Aircraft Corporation has, as a standard, the manufacturing of Products, that not only meet drawings and delivery requirements economically, but also insure the highest degree of Quality and Reliability.

In order to achieve these objectives, provisions of this Manual establish a standardized method of Control and Policy necessary to meet and maintain its high level of acceptance to its customers.

The Quality Control Manual has been prepared in accordance with Mil-Q-9858 and ~~or~~ Mil-I-45208A, ~~Civil Air Regulation, Part 52~~ and to specifications which meet the requirements of all Branches of the Armed Services, as well as the Commercial Aircraft Industry engaged in the research development and manufacture of Aircraft, Missiles, Space Vehicles, and Associated Electronic Components.

*Federal Aviation  
Regulations (FAR)  
Part 145*

Quality is the responsibility of every individual at Piasecki Aircraft Corporation. Each person must be thoroughly familiar with the Quality Control Procedures applicable to his job and adhere to the requirements as specified.

Our Standards, Reputation and Name must continue to be synonymous with the highest type of Aircraft Quality.

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Vice President

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President



I N D E X \*SECTION A - GENERAL PROCEDURES

- \* 1. Index
- \* 2. Policy of Quality Control
- \* 3. Company Organization
- 4. Written Procedure Control
- \* 5. Measuring and Test Equipment, Control of
- \* 6. Receiving Inspection
- \* 7. Packing and Shipping
- \* 8. In Process Inspection
- \* 9. Material Review
- \* 10. Quality Control Forms
- \* 11. Scrap Control
- \* 12. Quality Control Stamps
- \* 13. Government Furnished Property
- \* 14. Maintenance Government Furnished Equipment
- 15. Vendor Surveillance Inspection
- \* 16. Standard Test Methods
- \* 17. Training Program
- \* 20. Calibration Inspection Procedure
- \* 24. Corrective Action Policies
- \* 29. Quality Assurance Provisions
- \* 31. Drawing and Change Control
- \* 32. Quality Control Audit

\* Note! Only the sections marked with an asterisk  
are currently in use.



SECTION B - SPECIAL PROCESSES \*

- B-1. Magnaflux
- B-2. Zyglo
- B-3. Welding
- B-4. Brazing
- B-5. Cadmium Plating
- B-6. Anodizing
- B-7. Heat Treat Aluminum
- B-8. Heat Treat Steel
- B-9. Alodine

\* Note: Only the items marked with an asterisk  
are currently in use.  
~~See notes page 1~~



SECTION C - ELECTRONICS

- \* C-1. Electronics
- C-2. Soldering
- C-3. Solderless Connectors
- C-4. Wiring
- C-5. Cabling
- C-8. Hardware
- C-10. Printed Circuit Wiring
- C-20. Equipment List

\* See note page 1





AIRCRAFT

ORIGINAL  
(Ref)

Page 1 of  
Report Q.C.P. A-2  
Rev. 25 Sept. 68  
74

**SUBJECT:** Policy of Quality Control

**REFERENCE:** Mil-Q-9858A Federal NPC 200-2 NASA  
Mil-I-45208A Army NPC 200-3 NASA  
Far-21 FAA

**PURPOSE:** To maintain a standard method of operation in Quality Control and inspection that will insure a repetitive reliable quality product throughout purchasing, manufacturing and shipping.

**DEPARTMENTS AFFECTED:** All departments

**FORMS REQUIRED:** None

**GENERAL:** Maintaining an effective, economical Quality Control System, planned and developed in conjunction with the contractor's other planning functions, such as engineering, production, processing and subcontract planning which must be based upon consideration toward complexity of design, manufacturing techniques and reliability requirements.

The system shall assure that adequate control of quality is maintained throughout the entire process of manufacture from receipt of raw materials to and including the packaging and shipping of finished products, to provide a means for the ready detection of significant types of recurring discrepancies together with the method of corrective action.

The operating policies, procedures and methods are outlined in separate procedure manuals. These manuals describe the operating principles, provide the necessary direction for overall quality and fulfill the requirements of Mil-C-9858A, and/or Mil-I-45208A.

Within this procedure is a brief description of the following items:

1. ORGANIZATION
2. RESPONSIBILITIES
3. METHODS
4. FACILITIES
5. EQUIPMENT
6. QUALIFIED PROCESSES





## 1. ORGANIZATION

### 1.1 Company

Piasecki Aircraft Corporation is a stockholding company operating under a Board of Directors and President. At the present time, the main plant is located at International Airport in Philadelphia, Pa.

### 1.2 Department

The Quality Control Department uses the approved forms, and stamps and is governed by ~~the same~~ Quality Control Procedures. *See Q.C.F.A-2, 4-1350*

## 2. RESPONSIBILITIES

The Quality Control Department owes a responsibility to both the Company and the customer, maintaining predetermined policies with Aircraft Standards and Practices as prescribed by applicable Government Specifications along with specifications stipulated by the customer. The customer looks for quality inherent in the Company's name, reputation and product. The reputation of a company is dependent to a considerable extent on the integrity and soundness of its Quality Control Department.

### 2.1 Responsibility to Company

#### 2.1.1 Sub-Contracting and Purchasing

Through surveys and records of incoming items maintain a Qualified Vendor's List that will assure quality and performance necessary to meet either standards or specified requirements.

#### 2.1.2 Qualifying Company Processes

Maintaining controls and records of company processing by a standard method of testing, inspecting and calibrating to assure qualification in accordance with applicable Military Specification.

#### 2.1.3 Manufacturing Control

Maintaining control of raw materials, details and assemblies through all phases of manufacturing by standardized methods, process sheets and similar type documentary control.





#### 2.1.4 Tool and Gage Control

Standard methods and records of control by identification, inspection and calibration to assure reliability of all tools and gages.

#### 2.2 Responsibility to Customer

- 2.2.1 Adequate control of customer purchase orders, drawings, changes and specification to assure parts are being manufactured and inspected to the latest information.
- 2.2.2 Adequate inspection, identification and inventory control of customer supplied raw materials and parts.
- 2.2.3 Tools, gages and equipment supplied by customer are properly identified, inspected and controlled through manufacturing and storage.
- 2.2.4 Specific process and test requirements are adhered to with appropriate records and samples as required.
- 2.2.5 The Quality Control System and procedures are maintained to adequately satisfy all customer specific requirements.

#### 2.3 Personnel Responsibility

- 2.3.1 The Quality Control Manager is responsible to the Vice President. The Quality Control Manager formulates all policies, procedures and/or standards, supervising all inspection activities within the corporation and maintaining Quality Control in compliance with the Department of Defense, Mil-Q-9858A, Mil-I-45208A, ~~NRC 200-2, NRC 200-3, and Federal Aeronautical Administration FAR 1 and FAR 7.~~ *and Federal Aviation Regs. Part 145.*
- 2.3.2 Inspection Foremen and/or Quality Control supervisors are responsible to the Quality Control Manager, and charged with the execution of procedures, policies and/or standards formulated by the Manager. Inspection Foremen shall maintain a program insuring that all inspectors are properly equipped, instructed and supplied with the latest information.





2.3.3 The inspectors and Quality Control men are responsible only to their immediate supervisor and to the department for the soundness of their decisions. Integrity is the most important single trait necessary for a good inspector. Decisions must be based only on specifications, drawings and/or applicable written requirements. Past experience opinions, judgment or personalities must not be a basis for decisions





### 3. METHODS

To assure correct methods are utilized, whether required by customer, contract, specification or drawing, proper instructions are written for both manufacturing and Quality Control personnel. These methods and/or instructions are written, controlled and provided in accordance with applicable Quality Control Procedures. Each type or category of procedure, standard or instructions is briefly described as follows:

#### 3.1 Quality Control Procedures

These procedures describe the Quality Control System in every phase of plant operation.

#### 3.2 Standard Operating Procedures

These describe a specific method and instruction on how to perform an inspection function. This will encompass use of equipment, processing paper work and temporary inspection functions or changes to satisfy particular contract requirements.

#### 3.3 Standard Test Methods

Detailed description of a specific test with the equipment and materials used. This will include standard tests performed by the M & P Laboratory, Inspectors, Technicians, Engineering or Manufacturing personnel.

#### 3.4 Quality Assurance Provisions

Describing the method and inspection required to control a specific manufactured part or assembly. This may be a check-list of characteristics or a list of processes and tests required on a particular detail, component or assembly.

#### 3.5 Manufacturing Process Standards

For Manufacturing personnel only. A standard method of performing any manufacturing operation including the equipment and materials used.

#### 3.6 Production Inspection Requirements

Standard instructions and/or check-list to be used by Production Inspectors.





### 3.7 Inspection Records Clerk Instructions

Detailed descriptions of processing and filing inspection records. Standard methods to perform standard operations such as maintaining and issuing forms, stamps and materials to inspectors, receiving, processing, filing and distributing documents and information as required.

### 3.8 Training Program

Written courses on a particular inspection or production operation. This will include lecture, practical and testing. Test will include oral, written and practical.

### 3.9 Certified Personnel Control

The training, testing, recertification and control of personnel performing a particular process or operation.

### 3.10 Audit Control Book

A standard and periodic method of auditing our own Quality Control System.





#### 4. FACILITIES

- 4.1 Adequate facilities for inspectors are provided which include suitably located inspection stations with equipment such as benches, lighting and the necessary apparatus used in or essential to the accomplishment of the inspection operation.





## 5. EQUIPMENT

All equipment used for measuring and testing is controlled, calibrated and traceable to the National Bureau of Standards, and, if applicable, certified to Military Specifications.

- 5.1 All measuring and testing equipment used by production and maintained in the production tool cribs is controlled and periodically calibrated by the Inspection Department.





AIRCRAFT

Page 1

Report Q.C.P.A-3

Rev. 25 Sept 74

SUBJECT: Company Organization

PURPOSE To provide the necessary information and to indicate channels of action for operation or function.

DEPARTMENTS  
AFFECTED: All

FORMS  
REQUIRED: None

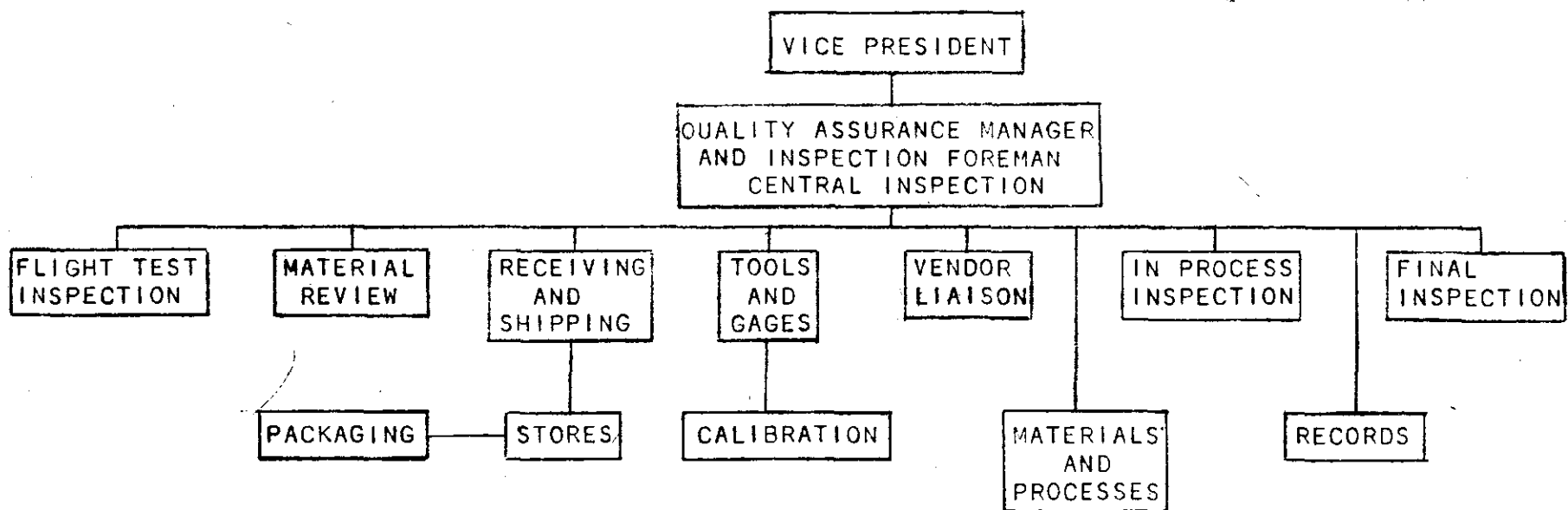
GENERAL: The operating policies, procedures and methods are outlined in separate procedure manuals. In the company organization chart, the key officials are given along with job or function responsibilities.





AIRCRAFT

## QUALITY CONTROL ORGANIZATION



Rev. 25 Sept. 74

Page 1  
Report Q.C.P.A.





SUBJECT: Measuring and Test Equipment, Control of

REFERENCE: Mil-I-A5208A NBS-Hdbk-H-28  
Mil-Q-9858A Mil-Hdbk-52  
Mil-C-45662 QCP - A-10  
Mil-G-10944A QCP - A-20  
Mil-I-45607  
Mil-Std.-120

PURPOSE: The purpose of this procedure is to set forth the methods used to assure that measuring and testing devices are calibrated against certified measurement standards which have known valid relationships to National Bureau of Standards at established periods to assure continued accuracy. The system must provide for the prevention of inaccuracy by ready detection of deficiencies and timely positive action for their correction.

DEPARTMENTS

AFFECTED: Quality Control, Inspection, Manufacturing,  
Engineering and Purchasing

FORMS  
REQUIRED: Equipment Calibration Record QC-164  
Gage Control Card QC-105  
Warning Tag QC-163  
Calibration Label QC-110  
Personnel Calibration Authorization QC-169  
Personal Equipment Calibration Record QC-170

GENERAL: Interchangeability and uniformity demand accurate determination of product characteristics and process parameters. No single measurement can be made more precise or show greater accuracy than the instrument used to make the determination. Control of measuring and test equipment is the first step toward control of measurements.

Standards established by the Piasecki Aircraft Corporation for calibrating the measuring and test equipment used in controlling product quality shall be certified by a Laboratory as having the capabilities for accuracy, stability and range required for the intended use.

This procedure envelops the calibration and control of all standards and measuring or test equipment both mechanical or electrical.





## DEFINITIONS:

Primary Standard - The highest order of measurement standard designated as the National Bureau of Standards.

Secondary Standard - The standard located at laboratories which has been calibrated to the primary standard at NBS.

Reference Standard - Standards of the highest order in the Piasecki calibration system which establish the basic accuracy for the system. The standards are calibrated at outside approved laboratories.

Transfer Standard - Designated measuring equipment used in the calibration system as a medium for transferring the basic value of reference standards to lower echelon transfer standards or measuring and test equipment.

Interim Standard - An instrument used as a standard until an authorized standard is available.

Working Standard - Instruments or devices, usually located in the manufacturing area, used to calibrate other instruments or devices, such as factory test equipment, machine shop micrometers, and verniers, etc.

Adjustable Measurement Equipment - That equipment which can be adjusted by the user to give more than one reading such as micrometers, vernier calipers, megohmmeters, voltmeters, etc.

Fixed Measuring Equipment - That equipment which is not adjustable by the user and is permanently set, such as knee blocks, squares, surface plates, resistors, capacitors, etc.

Fixed Gages - That equipment which is not adjustable by the user and is applicable to a specific dimension or part such as plain or thread plug and ring gages and fixture gages.

Calibration - Comparison of a measurement standard or instrument of known accuracy with another standard or instrument to detect, correlate, report, or eliminate by adjustment, any variation in the accuracy of the item being compared.

Calibration/Inspection Interval - The time between successive calibration/inspections (usually specified in months).

Original or Absolute Measurement - Measurements derived by comparison with natural physical constants such as standard wave lengths of light.

Measuring and Test Equipment - All devices used to measure, gage, test and inspect or otherwise examine items to determine compliance with specifications.



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## 1. SCOPE

- 1.1 The requirements of this procedure are applicable to all mechanical or electrical measuring and test equipment and standards.
  - 1.1.1 Company owned equipment and standards.  
Regardless of equipment assignment or location such as production, inspection, laboratory or vendor.
  - 1.1.2 Personnel Equipment.  
Any equipment personally owned by any company employee used to measure and/or test manufactured products.
  - 1.1.3 Government or customer equipment and standards.  
Any equipment borrowed or supplied and used to measure and/or test products and/or related equipment.
  - 1.1.4 Process Control Equipment.  
Any equipment used to control and/or measure process parameters such as voltage meters, recorders, clocks, timing devices, etc.  
Examples: cad plating, anodize, welding, heat treating, environmental test chambers, etc.
- 1.2 This procedure does not include the inspection/calibration and control of the following:
  - 1.2.1 Products  
Any measuring and/or controlling equipment which is a final product or part of a product.
    - 1.2.1.1 The inspection/calibration and/or control of product equipment would be a part of the Inspection Records for that particular product in accordance with the specific applicable requirements found either in the contract or engineering specifications pertaining thereto.
  - 1.2.2 Production Tooling  
Production tools, jigs and fixtures, either used to measure and/or manufacture a product. This type of equipment is controlled in accordance with the applicable company and Quality Control Procedures.





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## 2. RESPONSIBILITY

The control of measuring and test equipment is a vital part of the overall Quality Assurance Program. Each employee of Piasecki Aircraft Corporation has a responsibility to the company and its customers which includes the proper care and use of equipment to insure the continued quality of manufactured products.

### 2.1 Management

Provide and monitor the acquisition of equipment necessary to adequately insure the accuracy of product measurements and tests.

### 2.2 Quality Control Manager

2.2.1 Formulate and maintain procedures necessary to continue up-to-date calibration and control of measuring and test equipment.

2.2.2 Maintain a Quality Control System and program in measurement and test equipment to the satisfaction of Piasecki customer, Government Quality Assurance Representatives, FAA and applicable military specifications.

2.2.3 Provide experienced personnel and/or a training program to assure proficient and capable employees (authorized or certified) are performing the calibration and/or test.

2.2.4 Review and approve or disapprove the acquisition of equipment.

### 2.3 Quality Control Supervisors

2.3.1 Periodically audit the calibration system to assure continued compliance to the Quality Control Procedures

2.3.2 Review and approve any changes in the calibration interval schedule.

2.3.3 Evaluate and initiate requisitions for equipment.

2.3.4 Review contractual requirements for calibrations, measurements and test programs.

2.3.5 Formulate programs to satisfy specific contract measurement and/or test requirements. Submit programs to customer and Government Quality Assurance Representative for right of disapproval.





## 2.4 Quality Control Technicians

This is the person who performs the actual calibration and maintains records of same. This person may also carry another classification such as Inspector, Supervisor or Laboratory analyst, although he has experience or been trained to perform calibration. This will include mechanical, electrical or laboratory calibration.

- 2.4.1 Submit reference standards to outside approved laboratories for calibration as required.
- 2.4.2 Calibrate all other standards and measuring or test equipment as required.
- 2.4.3 Maintain permanent records of calibrations, major adjustments, repairs, modifications and location on all standards and measuring or test equipment.
- 2.4.4 Perform special tests as required for the purpose of investigating or verifying measurement and calibration techniques.
- 2.4.5 Maintain an inventory of all standards and measuring or test equipment.
- 2.4.6 Document deviations from calibration schedules complete with reasons and authority.
- 2.4.7 Perform calibration in accordance with applicable calibration/inspection procedures.
- 2.4.8 Responsible for the removal, identification and/or segregation of obsolete, defective, or out of service measuring or test equipment.
- 2.4.9 Calibrate and inspect all incoming equipment, purchased or supplied.
- 2.4.10 Maintain proper identification, serial numbering and calibration labels on all measuring or test equipment in use.

## 2.5 Inspection Personnel

- 2.5.1 Any equipment used by Inspection must be identified with an up-to-date calibration label.





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- 2.5.2 Continually check the calibration label on equipment being used by production.
- 2.5.3 Immediately tag (rejection tag), remove or report any defective equipment in use.
- 2.5.4 Know the care and use of equipment being used.
- 2.5.5 Issue and receive equipment from Central Inspection and perform visual inspection on equipment accordingly.
- 2.5.6 Production Personnel

Personnel manufacturing products have a responsibility to the company and its customers in producing a quality product which requires proper care and use of equipment.

- 2.6.1 Maintain and use equipment properly to prevent damage and decrease wear.
- 2.6.2 Check for up-to-date calibration on all equipment being used.
- 2.6.3 Notify supervision and/or inspection of defective or inadequate equipment.





### 3. CALIBRATION/INSPECTION SCHEDULE

The calibration/inspection schedule is the predetermined interval of time between calibration/inspection.

- 3.1 The calibration interval is the maximum period of time that the equipment will be permitted to be in use before recalibration/inspection is required.
- 3.2 Calibration/inspection intervals do not apply to equipment stored or otherwise removed from service.
- 3.3 All equipment not in use shall be tagged to indicate this condition and subjected to calibration/inspection before being issued for use (Warning Tag - QC-163). The applicable intervals start when equipments are requisitioned for use.
- 3.4 Over and above the normal calibration/inspection interval, equipment is inspected visually upon return from use. Visual inspection must be conducted on all equipment each time received, and any defect which could cause possible subsequent failure such as frayed leads on electrical equipment, etc., must be repaired prior to calibration.
- 3.5 If more than 5% of a particular type of equipment is out of tolerance at end of interval, the interval should be shortened.
- 3.6 It is the responsibility of all personnel to adhere to prevailing schedules. Equipment past due for calibration/inspection or equipment which in any way could detract from the quality of the produced item cannot be used. Such conditions must immediately be reported to the proper authorities for corrective action.
- 3.7 The recall system due to the nature of the facilities shall be accomplished by the individual Measurement Laboratory Inspector personally.
- 3.8 Interim Calibrations may be performed on special equipment to assure prevention of inaccuracies between calibration/inspections. This is accomplished by a running record of actual values obtained during use. This record is available to the Measurement Laboratory during calibration/inspection.





- 3.9 General Calibration Intervals based on accuracy.  
(Subject to modification based on frequency of use,  
past performance data, delicacy of equipment and  
severity of environment and/or use).

0.2 percent and better	Monthly
0.2 to 1.0 percent	3 Months
1.0 to 5.0 percent	6 Months
5.0 percent and up	12 Months
Resistance boxes, bridges, etc.	12 Months

- 3.10 Mechanical Measuring Equipment shall be scheduled as follows. This is the maximum time calibration interval allowed. As required, due to usage or frequency of repair, the calibration interval may be reduced. This will be recorded on the control card.

3.10.1 Adjustable Measuring Equipment	3 Months
3.10.2 Fixed Measuring Equipment	6 Months
3.10.3 Fixed Gages	Monthly (In use)

- 3.11 Mechanical Standards *shall* be scheduled as follows:

3.11.1 Reference Standards (Annually)

Gage Blocks  
Measuring Wires  
Rod Standards  
Dillon Dynamometers  
Surface Plates

3.11.2 Transfer Standards (Semi-Annually)

Gage Blocks  
Rod Standards  
Dillon Dynamometers  
Set Plugs

- 3.12 Electrical Measuring Equipment shall be scheduled as follows. This is the maximum time calibration interval allowed. As required, due to usage or frequency of repair, the calibration interval may be reduced. This will be recorded on the control card.





<u>Type of Equipment</u>	<u>Calibration Interval</u>
Analyzer	4 Months
Bridges	4 Months
Counter, Electronic	3 Months
Divider, Voltage	4 Months
Galvanometers	4 Months
Generator	3 Months
Meter, Capacitance	4 Months
Meter, DC & AC-DC, 2 to 5% Accuracy	4 Months
Meter, DC & AC-DC, 1% or Better	3 Months
Meter, Frequency	6 Months
Meter, Impedance	1 Year
Meter, Inductance	1 Year
Meter, Megohm	4 Months
Meter, VTVM	4 Months
Multipliers	4 Months
Oscillators	3 Months
Oscilloscopes	4 Months
Power Supply	3 Months
Resistor	6 Months
Standard Cell (Unsaturated)	1 Year
Tester, High Voltage	4 Months
Tester, Tube	4 Months

3.13 Electrical Standards shall be scheduled as follows:

3.13.1 Reference Standards (Annually)

<u>Type</u>	<u>Model</u>	<u>Manufacture</u>
A.C. Voltmeter	PA-5	Westinghouse
D.C. Voltmeter	PX-5	Westinghouse
Standard Cell	100	Epply Company
Impedance Bridge	150-A	General Radio Company
Inductance Q		
Meter	260-A	Boonton Radio Company
Resistance	Wheatstone	Rubicon Company
	Bridge	





## 3.13.2 Transfer Standards (Semi-Annually)

<u>Type</u>	<u>Model</u>	<u>Manufacturer</u>
D.C. Current	S	Sensitive
D.C. Mirometer	622	Weston
Frequency	211 CD	Hewlett Packard
Resistance Decade	1432-N	General Radio Co.
A.C. Voltage	D	Sensitive
A.C. Current	433	Western Elec.
D.C. Voltage	S	Sensitive
Capacitance	722MD	General Radio Co.
Inductance Q Meter	1060A	Boonton Radio Co.
Resistance	Resistors	Leads & Northrop
	100 Ohms &	Std.
	1000 Ohms	





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#### 4. IDENTIFICATION AND LABELING

All measuring and test equipment and measurement standards shall be identified (when possible), serial numbered and labeled to indicate as a minimum, serviceability and due date of calibration/inspection.

- 4.1 Identification may be via the Piasecki Name Plate or any other applicable means. (Exception - Para. 4.4). The optimum information will be as follows:

- 4.1.1 Nomenclature
- 4.1.2 Part Number
- 4.1.3 Model or Type
- 4.1.4 Manufacturer
- 4.1.5 Property of

- 4.2 Serial Numbers when practical must be permanently and legibly marked on each piece of equipment and standard by engraving or etching. (Exception - Paragraph 4.4).

- 4.2.1 Control and marking of serial numbers shall be accomplished by the Quality Control Measurement Laboratory. *shall*
- 4.2.2 Application of the serial number shall not damage or in any way limit the application of the device in performing its intended function.
- 4.2.3 When permanent marking is not practical, a label, decal or tag may be used.
- 4.2.4 When permanent marking, labeling, decals or tagging is not practical or advisable, the serial number shall be permanently marked on the case or container in which the item or set is normally stored.

Examples of such items:

- (a) Set of gage blocks
  - (b) Set of measuring wires
  - (c) Measuring Rods
  - (d) Optical flats
  - (e) Set of ring gages
- 4.2.5 When applicable, the serial number assigned by the manufacturer may be used.





- 4.3 Labels which indicate the calibration/inspection must be applied to each piece of equipment. Reference - Calibration Label - Form QC-110.
- 4.3.1 When the application of a label is not practical because of equipment size, either the container must be labeled or a tag with the label must accompany the equipment.
- 4.3.2 The application of labels shall not interfere with the application of the device in performing its intended function.
- 4.3.3 When any labeling is impractical, the control record shall be used to assure adherence to calibration/inspection schedules which references the serial number.
- 4.3.4 Equipment in use without a calibration/inspection label must be tagged and/or removed from use immediately.
- 4.3.5 When measuring and test equipment or measurement standards are to be removed from service because of malfunction, past calibration due date, etc., a tag shall be affixed to the equipment indicating the out of service condition.
- 4.3.6 All calibration labels will be authorized by the Final Acceptance Stamp of the inspector.
- 4.3.6.1 Labels on equipment or standards that are limited and/or calibrated to partial capability shall be authorized and identified by the In Process Acceptance Stamp.
- 4.4 Personally owned, borrowed, or customer supplied equipment will not be etched or marked in any manner. A removable label that does not mar or detract the equipment may be used.
- 4.5 Thread and plain ring or plug gages will not be labeled. The serial number references the Gate Control Card which identifies the calibration/inspection.





- 4.5.1 These gages are calibrated, sealed in wax, and ink stamped with the inspector's acceptance stamp on the wax.
- 4.5.2 The gages are not calibrated again until returned from use and the wax broken or removed.
- 4.5.3 The calibration interval becomes effective the date of issuing the gage.
- 4.6 Equipment or standards with the In Process Acceptance Stamp on the calibration label indicating limitations and/or partial capability must also be accomplished with a plain tag listing the limitations. *anied*
- 4.7 Equipment of a nature that requires special training and/or specific personnel to use shall be identified with standard labels or tags such as "Authorized Personnel Only."
- 4.8 Equipment with external or easily accessible adjustment controls for calibration must be sealed in a manner to preclude the possibility of these controls being adjusted or inadvertently moved.
- 4.9 Equipment used to indicate only and not measuring actual values shall not be calibrated or certified. This equipment must be labeled accordingly "Not Certified - Indicate only."
- 4.10 Independent reproducible standards which are derived from accepted values of natural physical constants in such a way that they do not require calibration against other standards to establish their accuracy may be labeled "No Calibration Necessary." Typical examples are an interferometer using a Krypton-86 orange light source for dimensional calibrations, and cesium beam type of microwave frequency standard. However, accessory equipment associated with these standards is not precluded from periodic calibration controls or labeling.





## 5. CONTROL RECORDS

Each piece of equipment or standard shall have a control record on file, referencing the serial number of the equipment.

The following forms are basic to the calibration/inspection system and provide a major source of objective evidence that the requirements of applicable procedures and specifications are being met.

### 5.1 Gage Control Card - QC-105

This control card is specifically for plain or thread plug and ring gages.

### 5.2 Equipment Control Record - QC-164

This control record card is for all other measuring or test equipment and standards.

### 5.3 Warning Tag - QC-163

*have* This tag is used on any equipment or standards that ~~has~~ been put out of use and require calibration/inspection prior to use.

### 5.4 Calibration Label - QC-110

This label is applied to any equipment or standards that have been calibrated and ~~is~~ acceptable for use.

### 5.5 Personal Calibration Record - QC-170

This is the record maintained for the calibration and control of personally owned equipment. One copy remains with the employee and one in the Measurement Laboratory.

### 5.6 Personnel Calibration Authorization - QC-169

This is the master list of equipment owned and authorized by an employee for calibration/inspection.





## 6. INVENTORIES

Three basic types of inventories shall be maintained: Company owned equipment, Customer owned equipment, and Personal owned equipment.

6.1 Company-owned equipment shall be maintained in the following separate lists.

- 6.1.1 Mechanical measuring or test equipment listed according to type as near as possible.
- 6.1.2 Electrical measuring or test equipment listed according to type as near as possible.
- 6.1.3 Mechanical standards listed separately according to type of standard with the calibration interval.
- 6.1.4 Electrical standards listed separately according to type of standard with the calibration interval.
- 6.1.5 Plain and thread plug or ring gages listed to size or product part number and name when applicable.
- 6.1.6 Process Control Equipment listing all instruments, meters, and/or controls that control processes such as plating, welding, heat treat, etc. This list shall be in accordance with the specific process.

6.2 Individual Inventory list for Government Furnished Equipment and each customer with the applicable contract number.

6.3 Personnel owned equipment listed to the employees' name.

6.4 Each measurement laboratory is responsible for maintaining their inventories. Each inventory must be ~~typed~~ *updated* periodically making the changes or additions that have occurred. The following distribution shall be made.





6.4.1 Quality Control Manager - 3 copies

6.4.2 Each plant's Central Inspection - 3 copies

6.5 Each inventory must include in the title, type of equipment and at least the following information:

6.5.1 Equipment Serial Number

6.5.2 Name or Nomenclature

6.5.3 Manufacturer's Name

6.5.4 Range and/or Size

6.5.5 Location





## 7. CALIBRATION PROCESS METHOD

Each measurement laboratory, i.e., mechanical, electrical and the ~~chemical~~/metallurgical laboratory shall maintain the following type records and/or files.

### 7.1 Active Files

- 7.1.1 All equipment or gage control cards for all equipment or standards that have been calibrated and are in use. Reference: Para. 1.1.
- 7.1.2 This is a tickler file with monthly and weekly (4) separators.
- 7.1.3 The control card will indicate the next calibration due date (month, day, year) and be filed behind the month and week separator that the due date would fall on.
- 7.1.4 On Monday of each week, the measurement laboratory inspector will pull the control cards behind the effective month and week. The inspector will then plan his calibration requirements for the week and perform accordingly.

### 7.2 Inactive Files

- 7.2.1 This file contains control cards for all equipment on standards not in use.
- 7.2.2 The control cards are filed numerically.
- 7.2.3 This type of equipment is primarily plain and thread plug or ring gages and any equipment which can be calibrated and sealed with wax along with equipment that has been tagged (warning tag) as requiring calibration prior to use, or equipment stores for completed or inactive product contracts and customer owned stored equipment.
- 7.2.4 This equipment with the control cards shall be audited once every six (6) months.
  - 7.2.4.1 This audit will include every control card in the inactive file regardless of its last calibration date.
  - 7.2.4.2 An equipment control record card shall be titled "Inactive Equipment Audit" and placed in the active tickler file as the reminder to perform this audit. The date of each audit shall be noted with the name of the person performing the audit.





7.2.4.3 The audit will consist of inspecting the equipment for damage and preservation.

7.2.4.4 Each record card shall be annotated as "Audit" with the inspector's stamp *and data*

### 7.3 Stored Equipment Files

7.3.1 This file contains control cards for any equipment or standards not in use or intended for use (Sort of a dead file).

7.3.2 This type of equipment would be segregated and locked up.

7.3.3 This type of primarily obsolete or non-repairable equipment which requires major repair or destruction.

7.3.4 The control cards are filed numerically.

### 7.4 Equipment History Files

7.4.1 Some equipment or standards require more records and data that cannot be maintained in the control record card files.

7.4.1.1 Calibration and certifications on references standards.

7.4.1.2 Inspection records and data sheets

7.4.1.3 Manufacturer's catalog, literature or specifications.

7.4.1.4 Material Receivers, Purchase Orders, etc.

7.4.2 A file folder with the equipment name and serial number will be maintained as required.

7.4.3 This file will also contain previous control cards on equipment for purposes of review and evaluation of calibration/inspection methods and intervals.





## 8. CALIBRATION/INSPECTION PROCEDURE

- 8.1 To assure a complete, correct and standard method of calibration/inspection is performed, calibration/inspection procedures are formulated, issued and maintained. Reference: QCP-A-20.
  - 8.1.1 A calibration/inspection procedure (CIP) manual must be maintained and used in each measurement laboratory.
  - 8.1.2 A master CIP file and index is maintained in Central Inspection.
- 8.2 In those instances where a Piasecki Calibration/Inspection Procedure has not been issued, the manufacturer's calibration/inspection procedure or maintenance manual, etc. may be used.
- 8.3 The CIP number or manufacturing catalog must be referenced on the control card as the method used to calibrate.
- 8.4 Accepted standard practices on standard type equipment is acceptable when a CIP is unavailable. The Note "STD" should be noted as the CIP References on the control card.
- 8.5 Actual values obtained during calibration shall be recorded on the control card.





## 9. CALIBRATION SOURCE

- 9.1 Measuring and test equipment will be calibrated by the Piasecki Aircraft Corporation or a commercial facility utilizing reference or subordinate standards whose calibration is certified as being traceable to the National Bureau of Standards, has been derived from accepted values of natural physical constants, or has been derived by the ratio type of self-calibration techniques.
- 9.1.1 Measuring and test equipment used in product inspection is calibrated against standards having values 4 to 10 times their accuracy.
- 9.2 Reference standards requiring calibration by a higher level standards laboratory shall be calibrated by a commercial facility capable of providing the required service, a government laboratory under arrangements made by the contracting officer, or by the National Bureau of Standards.
- 9.2.1 Under this region certificates of calibration issued from the Frankford Arsenal, Philadelphia, Pennsylvania, or the U. S. Naval Weapons Quality Assurance Office, Washington, D.C., are acceptable as is. Reference: Letter dated 15 June 1964 from DCASR (PT) QAM.
- 9.2.2 Gage manufacturers and commercial laboratories engaged in calibration services must furnish a certification of calibration. This certification will show traceability to N.B.S. and will contain the N.B.S. certification number, environmental conditions, and the date when the number was issued.
- 9.2.3 The certifying activity's calibration certificate (Gage Mfg. and/or Lab.) will show evidence of issuance from N.B.S. within a preceding twelve (12) month period. It is, therefore, conceivable that the using activity's certificate will be two years removed from the Bureau of Standards and be acceptable. In specific cases, this time may be lengthened when in the best judgment of the Government Representative, the contractor is being unduly penalized and no good purpose is being served.





- 9.2.4 All reference standards used in the calibration system shall be supported by certificate attesting to the date, accuracy, and conditions under which the results furnished were obtained.
- 9.3 All subordinate standards and measuring, test equipment shall be supported by data when such information is essential to achieving the accuracy control required by applicable specifications.
- 9.4 All certifications, reports and data shall be available for review by authorized customer representatives and the Government Quality Assurance Representative.
- 9.5 Any commercial metrology laboratory calibration facilities used must be selected from the Piasecki Approved Vendors List.





## 10. ENVIRONMENTAL CONTROLS

- 10.1 Measuring and test equipment and measurement standards shall be calibrated and utilized in an environmental controlled area to the extent necessary to assure continued measurements of required accuracy giving due consideration to temperature, humidity, vibration, cleanliness and other controllable factors affecting precision measurement.
- 10.2 Recommended requirements for electrical power within the laboratory should include voltage regulation of at least 10% (preferably 5%); low values of harmonic distortion; minimum line transients as caused by inter-action of other users on main line to laboratory (separate input power, if possible); and a suitable grounding system established to assure equal potentials to ground throughout the laboratory; (or isolation transformers may be used to operate individual equipments).
- 10.3 Where applicable, compensating corrections shall be applied to calibration results obtained in an environment which departs from standard conditions.
- 10.4 Environmental conditions will be specified when applicable, in calibration/inspection procedures or on the control record.
- 10.5 Refer to CIP-8 - "Guide for Environmental Controls".





## 11. ASSIGNING AND ISSUING EQUIPMENT

Equipment is assigned on a permanent basis, and issued on a temporary basis.

11.1 Equipment assignment must be accepted by the supervisor for the area the equipment will be located.

11.1.1 The supervisor is responsible for the use and handling of this equipment and correspondingly its condition.

11.1.2 The responsible supervisor and equipment location must be noted on the calibration control records and inventory.

11.1.3 Approval for assignment of equipment and standards must be signed on the control record by the Quality Control Supervisor.

11.1.4 It is the responsibility of the Measurement Laboratory to maintain the calibration/inspection on assigned equipment although the supervisor and operator are still responsible to notify the laboratory if the equipment should become defective or the calibration/inspection is, for some reason, overdue.

11.2 Issuing equipment may be accomplished in any one of the Measurement Laboratories, Central Inspection or the Production Tool Crib.

11.2.1 Equipment issued from Inspection or Quality Control shall be logged in the Issue Control Book.

11.2.1.1 The Issue Control Book is a bound page book with the following columns: nomenclature, serial number, person's name, date out, date in, inspector.

11.2.2 Any inspector can issue out or receive equipment at Central Inspection. Equipment from the Measurement Laboratory or the Chemical and Metallurgical Laboratory shall only be issued or received from the authorized inspector or technician.

11.2.2.1 Equipment will be issued to Production personnel only when it is not available from the tool crib.

Note: The Quality Control Supervisor





will periodically review the issue log book for repetitive borrowing of the same equipment.

- 11.2.2.2 Some equipment is for Inspection personnel only and will never be issued to Production personnel.
- 11.2.2.3 Any Inspector or Production personnel being issued equipment must sign the Issue Control Book and return the equipment at the end of the shift.
- 11.2.2.4 Thread or plain plug and ring gages may remain out until a job is completed or Quality Control picks them up for calibration.
- 11.2.2.5 All thread and plain plug or ring gages shall be calibrated and sealed upon return. This is documented on the Control Board.
- 11.2.2.6 Any equipment being returned must be inspected for damage and signed or stamped off in the Issue Control Book under the column "Insp".
- 11.2.3 Equipment from the Tool Crib is issued with a Tool Loan Order.
- 11.2.4 Assigned equipment is not noted in the Issue Control Book.
- 11.2.5 Issued equipment is not noted in the Control Record Card or the Inventory.
- 11.2.6 Equipment loaned to a vendor must be approved by the Quality Control Supervisor on the Piasecki shipping document.
  - 11.2.6.1 The Measurement Laboratory shall check the equipment for condition and calibration due date. If the calibration due date is within the next two weeks, perform calibration/inspection.





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- 11.2.6.2 The Measurement Laboratory Inspector shall record the information into the Issue Control Book from the Shipping Document including the Shipping Document and the Purchase Order.





## 12. PERSONALLY OWNED EQUIPMENT

- 12.1 Each and every Piasecki employee using personally owned measuring and test equipment within a plant or facility of the Piasecki Aircraft Corporation must have this equipment calibrated and controlled.
- 12.2 Each employee shall complete Form QC-169 "Personnel Calibration Authorization" authorizing Piasecki Quality Control to inspect and calibrate their equipment at specified intervals in accordance with this procedure.
  - 12.2.1 This Form QC-169 shall be filled out in duplicate, one to be retained by the employee and one for the Measurement Laboratory Files.
- 12.3 A "Personal Calibration Record" Form QC-170 shall be initiated in duplicate with the employee's name and listing all his equipment in accordance with the authorization Form QC-169.
- 12.4 The "Personal Calibration Record" shall then become a part of the active files on Equipment Calibration and be processed and controlled accordingly.
  - 12.4.1 The employee must retain the duplicate copy as his record of calibration available for review at any time.
- 12.5 Calibration/Inspection Intervals will be based on the standard intervals. Reference Paragraph 3.7.
- 12.6 All the employee's equipment shall be calibrated at one time, taking the minimum interval designated for any one piece of equipment.
- 12.7 Normal adjustments and minor repairs can be made by the Measurement Laboratory. All major repairs must be the responsibility of the employee.
- 12.8 Any equipment that cannot be repaired and/or calibrated which then becomes unsatisfactory shall be tagged with a rejection tag explaining the reason.





- 12.8.1 Rejected equipment shall be so noted on the Calibration Record Card and the calibration authorization form.
- 12.8.2 The employee must also sign the Calibration Authorization attesting to the fact of rejection and that he will no longer use this equipment until it is repaired and submitted for approval.
- 12.9 Any new or repaired equipment must be submitted and added to the Calibration Authorization and Calibration Record.





### 13. ACQUIRING NEW EQUIPMENT

#### 13.1 Initiation

13.1.1 The requirement for additional equipment may originate from many sources: Engineering, Planning, Production, Inspection, etc.

13.1.2 Special test equipment must be initiated or reviewed by Engineering.

13.1.2.1 All special test equipment must include operating, maintenance and calibration instructions.

13.2 All requisitions for new equipment must be reviewed and approved by the Quality Control Manager.

13.2.1 All requisitions for equipment must be approved by Management.

13.3 Requisitions to outside vendors for equipment must include the following:

13.3.1 Utilize and reference Military Specifications, when applicable, primarily on thread and plain plug or ring gages.

13.3.2 Request Operating, Maintenance and Calibration Instructions.

13.3.3 Require certification to National Bureau of Standards, when applicable. Reference Paragraph 9.

13.3.4 Accurate and clear description of the equipment with catalog numbers, etc.

13.4 Initial inspection shall be Preliminary Inspection performed by Receiving Inspection for in transit damage and items received.

13.4.1 The Receiving Inspector will forward the equipment and paperwork to the applicable Measurement Laboratory.





- 13.5 Final and complete inspection by the Measurement Laboratory.
  - 13.5.1 A complete inspection with actual data shall be performed by the Measurement Laboratory. This inspection record will become a part of the Historical File. Reference Paragraph 7.4.
  - 13.5.2 The final inspection must include the actual operation, test and/or use to which the equipment will be used.
- 13.6 Control Records must be established.
  - 13.6.1 Apply a serial number.
  - 13.6.2 Add to Inventory.
  - 13.6.3 Initiate a Control Record Card.
  - 13.6.4 Initiate a Calibration/Inspection Procedure.
- 13.7 All new instruments will be recalibrated within four production weeks (33 days) from the initial calibration date. If no discrepancies are noted they will then be integrated into the regular calibration schedule.
- 13.8 In the event that an instrument is not covered by a formal procedure, for example, in the case of a new instrument, the calibration may be performed in accordance with an interim procedure or the manufacturer's instruction book. If working standards are not available, interim standards will be established. Interim procedures are good for a maximum of six (6) months.





#### 14. STORAGE AND HANDLING

14.1 Measuring and test equipment which is to be stored must be prepared as follows:

14.1.1 Checked for calibration or repair requirements.

14.1.2 Record results of inspection on the Calibration Record, being sure to include any repair requirements.

14.1.3 Check preservation against rust or deterioration.

14.1.4 Check container requirements to prevent damage and, if placed in container, assure proper and complete identification on the container.

14.1.5 Apply label or tag to properly identify condition and by whom inspected.

14.1.5.1 Condition would be either usable or non-usable and obsolete, worn or repair required.

14.1.6 Place the Calibration Record Card in the Active File.

14.1.7 All stored equipment will be inspected and audited once every six (6) months in accordance with Paragraph 7.2.4.

14.2 The handling of measuring and test equipment is every employee's responsibility. Handling and operating shall be conducive to good practices and the maintenance and accuracy of the equipment.

14.2.1 Experienced inspectors must constantly survey the use of equipment by manufacturing.

14.2.2 Equipment that is returned damaged shall be reviewed by the Quality Control Supervisor for the possibility of damage due to improper handling and, if so, proper instructions are given to the employee.





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- 14.2.2.1 Occasionally the Quality Control Supervisor will audit and/or review the proper procedure in using equipment with Inspection personnel.
- 14.2.3 Sensitive and/or intricate equipment shall in most cases be accompanied with a Standard Operating Procedure which describes the correct method of using or operating the equipment.
- 14.2.4 Sensitive and/or intricate equipment which requires relocation shall be recalibrated. A tag or label shall be attached to the equipment when this contingency exists.





## 15. DISPOSITION OF WORN OR OBSOLETE EQUIPMENT

15.1 All equipment which is worn, obsolete or otherwise is no longer suitable for use must be tagged and removed from use.

15.1.1 This tagged equipment must be segregated, identified and properly stored.

15.1.2 The Calibration Record will be maintained in the Stored Equipment File.

15.1.3 The equipment must be removed from the Inventory.

15.1.4 No further inspection, audit or records are required until disposition of equipment is made.

15.2 Disposition of this equipment will be obtained via a Defective Material Report Procedure. This is processed in accordance with Q.C.P. A-9.

15.2.1 Scrap disposition requires destroying the equipment and placing all records pertaining thereto in the dead file.

15.2.2 Repair Disposition  
A work order and/or a requisition shall be prepared outlining the requirements and in accordance with paragraph 13 on "Acquiring New Equipment".

15.2.3 Hold-As-Is Disposition  
Retain copy of DMR in the Historical File with the Control Records.





## 16. VENDOR CONTROL

- 16.1 All vendors must be on the Quality Control Approved Vendors List prior to receiving any purchase orders from Piasecki Aircraft Corporation.
- 16.2 This approval includes the vendor calibration/inspection procedure in accordance with Mil-C-45662.
- 16.3 Subsequent to awareness of a contract, periodic surveys shall be conducted to assure continued compliance with calibration/inspection system requirements.
- 16.4 Prior approval of the subcontractors calibration/inspection system by other companies, corporations or government agencies may, when approved by the Quality Control Manager, be considered as meeting the requirements of this section. However, careful consideration must be given to any special contract requirements. The subcontractor will be made aware of and be required to incorporate any special requirements in its calibration/inspection system.
- 16.5 Special measurement or test requirements shall be witnessed and documented by Piasecki Quality Control.
  - 16.5.1 This will be incorporated in the Purchase Order to the Vendor.
  - 16.5.2 Special measurements or tests may require also the equipment used, serial number, date of last calibration.





## 17. SYSTEMS AUDIT

- 17.1 As part of the overall Quality Assurance Audit Program, periodic surveys of the measuring and test equipment control program will be conducted.
- 17.2 The Quality Control Manager will assign responsibility for conducting the program audit and issuing the audit report. The audit report will include corrective actions required and date corrections are expected to be completed and date of next scheduled audit.





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SUBJECT: RECEIVING INSPECTION

REFERENCE: Mil-Q-9858A, Mil-I-45208A

PURPOSE: To establish and maintain a uniform method of controlling and inspecting incoming items.

## DEPARTMENTS

AFFECTED: All Departments

FORMS	Purchase Order and Receiver	Q.C.-118
REQUIRED:	Material Receipt	Q.C.-117
	Receiving Inspection Report	Q.C.-112
	Inspectors Trip Report	Q.C.-125
	Defective Material Report	Q.C.-123
	Vendor Rating Card	Q.C.-116
	Acceptance Tag	Q.C.-121
	Rejection Tag	Q.C.-122
	Identification Tag	Q.C.-119
	Withhold Tag	Q.C.-120
	Shelf Life Label	Q.C.-165

GENERAL: All incoming items other than plant supplies must be processed through receiving inspection. Shop supplies that are used in qualified processes must have receiving inspection.

Receiving inspection will not retain or maintain any material receiver files. All material receivers, inspection reports and documents, thereto, will be forwarded to Central Inspection for filing in the applicable job folders.

A library of Government Standards and Specifications will be maintained, *available for receiving inspection.* ~~in receiving inspection.~~ Drawings, customer specifications, purchase orders, etc., will be maintained in Central Inspection and available for receiving inspection.

Receiving inspection will maintain Vendor Rating File in which inspection results will be recorded. This is a continual review of vendor quality performance.





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## 1. RECEIVER TO RECEIVING INSPECTION

- 1.1 The receiver will complete the Material Receiver in accordance with what was actually received. This will be checked against the shipping documents and any errors in quantity or description must be so noted on the Material Receiver.
- 1.2 Any documents received, such as Inspection Reports, Test Reports, etc., must be listed on the Material Receiver.
- 1.3 All items will be submitted to receiving inspection in the receiving inspection area. All items must be accompanied with the applicable Material Receiver, Purchase Order, and all documents received with the shipment.
- 1.4 Items received that cannot be submitted in the inspection area will be properly identified for receiving inspection and the Material Receiver with documents will be submitted to the receiving inspection.
- 1.5 All items must be properly identified for stores prior to submission to receiving inspection, i.e., raw material coding.





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## 2. TYPES OF INCOMING ITEMS

### 2.1 Government Furnished

- 2.1.1 Bailed property
- 2.1.2 Equipment
- 2.1.3 Components

### 2.2 Customer Supplied

- 2.2.1 Tools and Fixtures
- 2.2.2 Gages and Instruments
- 2.2.3 Raw Material
- 2.2.4 Components (Details and/or Assemblies)
- 2.2.5 Items returned as rejected or for modification

### 2.3 Piasecki Purchased

- 2.3.1 Government source inspection
- 2.3.2 F.A.A. source inspection
- 2.3.3 Piasecki source inspection
- 2.3.4 No source inspection





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### 3. INSPECTION PROCESS METHOD

- 3.1 Unless authorized by the Quality Control Supervisor, all incoming items will be inspected in order of receipt.
- 3.2 All documents received other than Packing Slips, Freight Bills, etc., with the shipment must be listed on the Material Receiver.
- 3.3 A receiving inspection report must be written for each item on a Material Receiver. If the item received has not more than two major characteristics to inspect, the Material Receiver may be used as the receiver inspection report.
- 3.4 All documents and inspection reports, etc., must cross reference the material receiver, number and special document number.
- 3.5 Serial numbers on items received must be noted on all applicable documents such as the material receiver, inspection reports, acceptance tags, etc.
- 3.6 Review certifications and/or affidavits for conformance to applicable specifications and accordance with the material receipt.
  - 3.6.1 Incoming items without certifications may be accepted from an approved vendor when they are of a standard nature. Material or processes for critical items must be either rejected or moved on preliminary acceptance.
- 3.7 Submit to the Material and Process Laboratory the material receipt, certifications, drawings and Engineering requirements, on special processes that require verification.
- 3.8 All test bars and samples must be properly identified, recorded and submitted to the Material and Process Lab.
- 3.9 All incoming items will be inspected to the latest revisions and so noted on all documents. When the latest revision has not been incorporated the items shall be rejected regardless of purchase order requirements.





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3.10 Check approved vendor's list for vendor qualifications.

3.10.1 If vendor's name is not on the approved list or has not been approved for the service performed, the item received must be rejected.

3.11 The results of inspecting incoming items must be recorded on the vendor rating card.

3.11.1 When the vendor's quality rating goes out of control, the vendor rating card must be forwarded to Central Inspection for action.

3.12 Periodic laboratory verification of objective quality data furnished by raw material vendors to satisfy chemical and physical requirements of materials.

3.12.1 At least once in twenty shipments received from one vendor a laboratory verification is required on critical materials.

3.12.2 This verification must be recorded on the vendor rating card.

3.12.3 The Piasecki M & P Lab will retain the report file with a copy to receiving inspection for recording and then to Central Inspection for filing in the Vendor's Facility File.





#### 4. ACCEPTANCE METHOD

##### 4.1 Final Acceptance

All items received, regardless of any source inspection performed, i.e., Government, F.A.A., Customer, Piasecki, will not be considered final accepted. Final inspection acceptance must be performed by receiving inspection or in plant on items which require further testing in another area.

4.1 The inspector's final acceptance stamp (with the Piasecki insignia) will be used on all items that are completely acceptable and require no further inspection or test.

4.1.2 All documents must be reviewed and stamped with the final inspection acceptance stamp if approved.

4.1.3 All items accepted must be properly identified for inspection status.

##### 4.2 Preliminary Acceptance

Items that require further testing or inspection either at a later date or another inspection station.

4.2.1 Advance release of material when an emergency exists whereby production and/or planning wishes to take the responsibility of using an item or items that have not been completely inspected to the satisfaction of the Receiving Inspector.

4.2.1.1 Advance release of material can only be authorized by the Production Supervisor or Director of Planning with the approval of the Quality Control Supervisor.

4.2.2.2 The master material receipt must be so noted and signed by both the authority requesting advance release of material and the approving Quality Control Supervisor.





- 4.2.2. Items not released to production that require further testing or inspection will be so noted on the master receiver.
- 4.2.3 This preliminary acceptance material receiver will be stamped by the receiving inspector with the In Process Acceptance Stamp (Square).
- 4.2.4 These items will be tagged with a Withhold tag until final acceptance has been made.
- 4.2.5 The material receiver will be processed notifying all concerned.
- 4.2.6 Five copies of the material receiver will accompany the items, until final acceptance has been made, at which time the material receiver copies will be stamped with the final acceptance stamp and distributed to all concerned.
  - 4.2.6.1 Central Inspection will distribute a copy to Purchasing, Accounting, Planning, Receiving, and Inspection.





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## 5. REJECTION METHOD

- 5.1 A complete inspection must be performed to be sure all discrepancies have been found. A complete report of ACTUAL results must be recorded.
- 5.2 Initiate a Defective Material Report giving an accurate description with actual inspection results.
  - 5.2.1 Only facts and not assumptions must be recorded.
  - 5.2.2 Any other reports or documents, pertinent to the rejection, may accompany the DMR, but must be recorded on the DMR.
- 5.3 Complete a Rejection Tag with a brief description of the rejection.
  - 5.3.1 Be sure to note the DMR number on the Rejection Tag.
- 5.4 Attach the Rejection Tag to the rejected items along with the Material Receiver, Receiving Inspection Report and any documents pertaining to the item.
- 5.5 Segregate the rejected items from the normal flow of work.
- 5.6 Forward the Defective Material Report to Central Inspection for appropriate distribution and disposition.
- 5.7 Defective Material Receiver returned with disposition.

Review DMR to understand disposition requirements and that Purchasing has notified the vendor of the disposition.

## 5.7.1 Use "as is" disposition

- 5.7.1.1 Stamp all items, documents and processes in accordance with acceptance method reference paragraph 4.

## 5.7.2 Return to vendor disposition

Items returned to the vendor must be accompanied with the rejection tag and a copy of the DMR. The DMR number must be noted on the shipper and a brief explanation for returning the items.





### 5.7.3 Scrap disposition

5.7.3.1 Do not return to vendor, process all paper work noting DMR number, and scrap disposition. Place parts in the inspection bond room to be held for thirty days prior to destroying.

### 5.7.4 Rework by Piasecki

5.7.4.1 Process material receiver as an acceptance with DMR number.

5.7.4.2 Move items with rejection tag and DMR attached.





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## 6.1 GOVERNMENT FURNISHED PROPERTY

- 6.1 All government furnished property must be submitted to receiving inspection with a material receiver and all documents received with the shipment.
- 6.2 The receiving inspector will perform a visual inspection for the following.
  - 6.2.1 Identification
  - 6.2.2 In-Transmit Damage
  - 6.2.3 Preservation
  - 6.2.4 Conformance to the material receiver shipping documents: specifications referenced by them.
- 6.3 All Government documents, requisition and invoice Form DD-1149-4 and the Material Receiver copy will be forwarded to the Government Property Administrator for review, recording and notifying the government representative.
- 6.4 Accepted items will be held in a segregated area until instructions are received from the Government Property Administrator .
- 6.5 Items that require further testing will be processed in accordance with paragraph 4.2.
- 6.6 Rejected or damaged items will be written up on a DMR and both the government representative and the government furnished property administrator must be notified.
- 6.7 All equipment or bailed property will be tagged with an identification tag and the paper copy will be forwarded to the Government Property Administrator.
- 6.8 Government Inspection Requirements.

When Government inspection is required, the contractor shall add to his purchasing document the following statement:

"Government inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify the Government Representative who normally services your plant so that appropriate planning for Government inspection can be accomplished."





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## 7. CUSTOMER SUPPLIES

### 7.1 Types

7.1.1 Tools and Fixtures

7.1.2 Gages and Instruments

7.1.3 Raw Material

7.1.4 Components, Detail Parts and Assemblies

7.1.5 Returned as rejected

7.2 Unless otherwise instructed or for any reasonable doubt, all items received from a customer for use on customer contracts will be considered as dimensionally and physically acceptable.

7.3 Visual inspection will be performed for the following:

7.3.1 Identification

7.3.2 In-Transit Damage

7.3.3 Configuration

7.3.4 Preservation

7.4 All items accepted will be so designated by an In Process Acceptance Inspection Stamp.

NOTE: The inspector in the area, where the customer supplied item is used will be responsible for final acceptance.

7.5 Items that are unacceptable will be processed as a rejection (reference paragraph 5) except that the DMR will be processed through Piasecki Customer Representative.

### 7.6 Specific Requirements

7.6.1 Tools and Fixtures

7.6.1.1 An identification tag (form QC119) must be attached to each tool and fixture. Copy of tag to be forwarded to Central Inspection.

7.6.1.2 Verify all identification stamps particularly on drawing revisions and dates.





## 7.6.2 Gages and Instruments

7.6.2.1 An identification tag (form QC119) must be attached to each gage and instruments. Copy of tag to be forwarded to Central Inspection.

7.6.2.2 Verify calibration dates are up to date and serial numbers are correct with the proper identification.

## 7.6.3 Raw Material

7.6.3.1 Assure material retains customer's identity.

7.6.3.2 If material type and composition identification is inadequate use Piasecki Raw Material Code.

7.6.3.3 Check serial numbers on all forgings and casting. If not serial numbered, then apply serial numbers and document accordingly.

7.6.3.4 Verify and document all raw material condition.

## 7.6.4 Components, Detail Parts and Assemblies

7.6.4.1 Assure that all items are properly packaged for storing to prevent damage prior to use.

7.6.4.2 Verify and/or apply proper and adequate identification.

## 7.6.5 Items Returned as Rejected

7.6.5.1 Must be accompanied with the customer rejection report.

7.6.5.2 Verify rejection and initiate a DMR. Any variations from the customer's rejection report will also be noted.

7.6.5.3 Segregate material until receipt of DMR with the disposition.





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7.6.5.4 Upon receipt of DMR, note  
disposition on Material  
Receiver and process accordingly.





## 8. PIASECKI PURCHASED

### 8.1 Government Source Inspected

- 8.1.1 Verify government inspectors stamp on documents received.
- 8.1.2 Check documentary evidence of all test data requirements.
- 8.1.3 Review and audit inspection and test data.
- 8.1.4 The Government Source Inspection stamp does not relieve the responsibility of Piasecki Aircraft Corporation nor becomes a substitute for Receiving Inspection. This is a verification of proper procedures and techniques being used by a vendor.
- 8.1.5 All items will be accepted in accordance with the acceptance method in this procedure reference paragraph 4.
- 8.1.6 All rejected items will be verified by the Piasecki cognizant Government Quality Control Representative and processed in accordance with paragraph 5.
- 8.1.7 Purchasing Documents

When, under authorization of the Government Representative, copies of the purchasing document are to be furnished directly by the subcontractor or vendor to the Government Representative at his facility rather than through Government channels, the contractor shall add to his purchasing document a statement substantially as follows:

"On receipt of this order, promptly furnish a copy to the Government Representative who normally services your plant or, if none, to the nearest Army, Navy, Air Force, or Defense Supply Agency inspection office. In the event the representative or office cannot be located, our purchasing agent should be notified immediately."





## 8.2 F.A.A. Source Inspected

- 8.2.1 All items received with FAA source inspection performed or from an approved FAA facility will be processed in accordance with para. 8.1.
- 8.2.2 Incoming aircraft or components to be processed under FAA requirements must be processed as follows.
  - 8.2.2.1 Material Receiver moved on preliminary acceptance. Reference para. 4.2.
  - 8.2.2.2 Forward all documents to flight test inspection.
  - 8.2.2.3 Flight test inspection will immediately conduct a preliminary inspection to determine the state of preservation.
    - 8.2.2.3.1 If preservation is inadequate, a DMR must be initiated to determine if tear down or proper preservation is necessary at this time.
    - 8.2.2.3.2 A production process and planning sheet must be initiated to proceed with either requirement.
    - 8.2.2.3.3 The Process and Planning Sheet, DMR and other inspection Records of performance must be completed, stamped and become a part of the permanent record for that aircraft or component.
  - 8.2.2.4 Flight test inspection must also inspect for damage and functional operation.





SUBJECT: PACKAGING AND SHIPPING

REFERENCE: MIL-I-45208A Inspection System Requirements  
MIL-Q-9858A Quality Control Systems  
MIL-STD-726A Packaging Requirement Codes  
MIL-STD-129C Marking for Shipment and Storage  
MIL-STD-116D Preservation, Methods of

DEPARTMENTS

AFFECTED: Shipping Dept.  
Inspection Dept.  
Purchasing Dept.

FORMS QC-173 Packing and Packaging  
REQUIRED: QC-144 Shipping Document

GENERAL: To maintain effective quality control of Packaging and Shipping, in accordance with Military Specifications and/or specific requirements of customer and standard packaging process. Shipments will be broken down into three categories: Type 1 - those items requiring Government Source Inspection; Type 2 - those requiring no Government Source Inspection; Type 3 - those items being shipped other than Government Contracts.

1. Government Items requiring Source Inspection

1.1 Acceptance for shipment

1.1.1 All items must show acceptance by both Company and Government Inspection prior to shipment. This will be indicated by either an acceptance tag, an acceptance check list or an acceptance stamp on the part.

1.2 Packaging

1.2.1 Packaging shall be checked for adherence to Military Specifications required in the applicable contract. Form QC-173 will be used as a check list on each shipment. This check list will be presented to the Government Representative for approval on each shipment.

1.2.2 The preservation of the item is to be in accordance with the Military Specifications of the contract, and acceptance of same stamped in Master Log.





- 1.2.3 Certification  
Shipping Inspector must ascertain that materials requiring certification as per contract were utilized in packaging and preservation of the item.
- 1.2.4 Marking and Stenciling  
Must be in accordance with Military Standard requirements as specified on the contract and acceptance of same must be so noted in Master Check list.
- 1.2.5 Presentation  
Submit to the Government Representative, the Master Log, including the Packaging and Shipping Check List, and the DD-250 form for his acceptance stamp for shipment.
- 1.2.6 The records of the shipments shall be maintained in the Inspection files. This will include all check lists, certification, etc., pertaining to the shipment.





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## 2. Government Items not requiring Source Inspection.

### 2.1 Acceptance for shipment

2.1.1 All items must show acceptance by Company Inspection prior to shipment. This will be indicated by either an acceptance tag, an acceptance check list or an acceptance stamp on the part.

### 2.2 Packaging

2.2.1 Packaging shall be checked for adherence to Military Specifications required in the applicable contract.

2.2.2 The preservation of the item is to be in accordance with the Military Specifications of the contract, and acceptance of same stamped in Master Log.

2.2.3 Certification  
Shipping Inspector must ascertain that materials requiring certification as per contract were utilized in packaging and preservation of the item.

2.2.4 Marking and Stencilling  
Must be in accordance with Military Standard requirements as specified on the contract and acceptance of same must be so noted in Master Check List.

2.2.5 The records of the shipments shall be maintained in the Inspection files. This will include all check lists, certification, etc., pertaining to the shipment.





### 3. Items being shipped other than Government Source Contract

#### 3.1 Acceptance of shipment

- 3.1.1 All items must show acceptance by Company Inspection prior to shipment. This will be indicated by either an acceptance tag, an acceptance check list or an acceptance stamp on the part.

#### 3.2 Packaging

- 3.2.1 Will be accomplished to the Standard Packaging Process which will alleviate any possibility of damage to items with consideration to destination and type of item being shipped.
- 3.2.2 The preservation of the item is to be in accordance with the Military Specifications and/or requirements of the customer. When no requirements are specified, preservation shall be in accordance with standard practices.
- 3.2.3 Certification  
Shipping Inspector must ascertain that materials requiring certification as per contract were utilized in packaging and preservation of the item.
- 3.2.4 Marking and Stencilling  
Must be in accordance with Military Standard requirements as specified on the contract and/or requirements of the customer. When no requirements are specified, marking and stencilling shall be in accordance with standard practices.
- 3.2.5 The records of the shipments shall be maintained in the Inspection files. This will include all check lists, certification, etc., pertaining to the shipment.



**SUBJECT:** IN-PROCESS INSPECTION

**REFERENCE:** MIL-Q-9858A  
MIL-I-45208 A  
MIL-STD-105D  
MIL-STD-414

**PURPOSE:** To assure a continuous control of quality in the fabrication and processing of parts, components and assemblies in accordance with applicable drawings and specifications.

**DEPARTMENTS  
AFFECTED:** Production, Planning, Inspection

**FORMS  
REQUIRED:** QC-128 Inspection Report  
QC-113 Sampling Inspection Report  
QC-115 Request for Government Inspection  
QC-123 Defective Material Report  
QC-121 Acceptance Tags  
QC-122 Rejection Tags  
QC-129 Rework Tags  
QC-120 Withhold Tags  
QC-141 Routing Sheet  
QC-114 Summary of Sampling Inspection

**GENERAL:** In process inspection is performed throughout manufacturing in each department. Evidence and/or results of the in process inspection performed is primarily recorded on routing sheets and inspection reports.

Normally, all inspection is performed by Quality Control Inspectors. When a production run is set up with large quantities or in electrical assemblies a production inspector will perform 100% inspection on a lot basis. A Quality Control Inspector will inspect samples of each lot.

Summaries of Quality Control Trends and X & R charts are used on operations and/or parts involving large quantities which run for several weeks. Because of the day by day changing type of operations to manufacture different kinds of parts to satisfy varied contracts; first piece, moving and final inspection by Quality Control is more than adequate control.





## **1. Sheet Metal and Machine Shop**

### **1.1 First Piece Inspection**

#### **1.1.1 Operations**

First piece inspection is performed on each operation by a mechanical inspector. The acceptance of this first piece with the actual dimension obtained is so noted on the process and/or routing sheet.

#### **1.1.2 Completed Parts**

First piece inspection is performed on completed parts. This is a complete dimensional inspection and is recorded on an Inspection Report Form No. QC-128. The acceptance of the first piece will be so noted on the routing sheet.

### **1.2 Roving Inspection**

1.2.1 The inspector periodically checks each job as the parts are being made to insure satisfactory operation of equipment and parts. Each inspection performed will be so noted on the routing sheet. The frequency of inspection is determined by the Inspection Foreman and is based primarily on the size of the lot, the size of the part, the amount burned out per unit time, and relative value of the part. Each lot or container of parts are accompanied with either a routing sheet or an Inspection Acceptance Tag; Form No. QC-121, identifying the inspection standing of the parts.

### **1.3 Final Inspection**

1.3.1 When parts are completed, they are delivered to the area inspection station with the appropriate routing sheet. Final inspection is performed and recorded on the routing sheet and/or an Inspection Report. For accepted items going to a subsequent processing station, the inspector stamps and dates the routing sheet. For accepted items going directly to stock or shipping, the inspector attaches an acceptance tag.

1.3.2 Most parts are inspected to a "Classification of Defects" single sampling plan per MIL-STD-105. Some fabricated parts are inspected 100% if the quantities are small, expensive or have critical application.

## **2. Process Inspection**

2.1 All parts subject to specific processes such as welding,



surface and metal treatments are inspected and controlled in two ways. Process Inspection and Control, Part Inspection and Control.

#### **2.1.1 Process Inspection and Control**

Each process is maintained in accordance with the applicable specification. This includes the original testing and samples for qualification and periodic at specific intervals to assure continued quality of each process. Records of test data and corrections are maintained in the Quality Control Office subject to review at any time. When a process is out of control an inspection rejection tag will be placed on the control panel.

#### **2.1.2 Part Inspection and Control**

All parts are submitted for inspection following a performed process. The inspection results are recorded on the routing sheet. Non-Destructive testing, such as penetrant inspection, may also be performed following a process such as welding. The results are recorded on a routing sheet and/or an Inspection Report.

### **3. Electrical Sub-Assemblies**

At the beginning of a job, the Inspection Foreman in cognizance with the Production Foreman and the Government Inspector sets up the inspection stations for sub-assemblies. At this time, specific sampling plans are set up in accordance with the requirements of the contract. For every inspection station, each inspector is provided with a set of inspection instructions.

3.1 Electrical Sub-Assemblies are inspected 100% by production inspector at each inspection station. Quality Control Inspector performs sampling inspection on each lot submitted and records same on the sampling inspection report. The lot is then submitted to Government Inspector on a request for Government Inspection submission form.

3.2 Quality Control maintains a summary of sampling inspection reports to ascertain a process average.

### **4. Electrical Final Assembly**

All electrical assemblies are inspected 100% at final inspection. This is performed in accordance with applicable test specifications and contract requirements.



**Quality Control**

- 4.1 A production technician inspector performs the final inspection and test in accordance with a test instruction sheet provided by engineering and/or Quality Control. This test instruction sheet is concurred in by the Government Inspector.
- 4.2 A Quality Control Inspector performs a sample inspection and records the results on a sampling inspection report. The assembly is then submitted to the Government Inspector on a request for Government Inspection Form Submission.

**5. Packaging and Shipping**

All packaging is inspected by the Quality Control Inspector.

- 5.1 Packaging requirements and methods are submitted to the Government Inspector with a packaged sample for approval on the first assembly.
- 5.2 All assemblies thereafter are packaged and inspected in accordance with the first assembly approval. The packaged assemblies are submitted to the Government Inspector on a request for Government Inspection Submission Form.

**6. Acceptance Sampling**

- 6.1 When acceptance sampling is used during in-process inspection, normal inspection will be used at the start of inspection unless otherwise directed by the responsible authority, i.e., reference MIL-STD-105D. Normal inspection is level II, AQL 1% Major and 4% Minor.
- 6.2 The degree of sampling is segregated into three basic categories: Tightened, Normal and Reduced.

**6.2.1 Normal to Tightened**

When normal inspection is in effect, tightened inspection shall be instituted when 2 out of 5 consecutive lots or batches have been rejected on original inspection, i.e., ignoring resubmitted lots or batches for this procedure.)

**6.2.2 Tightened to Normal**

When tightened inspection is in effect, normal inspection shall be instituted when 5 consecutive lots or batches have been considered acceptable on original inspection.

**6.2.3 Normal to Reduced**

When normal inspection is in effect reduced inspection shall be instituted provided that the preceding 10 lots have been on normal inspection and none has been rejected on original inspection.



## **7. Approved Sample**

- 7.1 An approved sample will be the standard of workmanship when the drawings and/or specifications do not clearly define.**
- 7.2 Approved samples must be approved by the customer prior to the production run.**

## **8. Acceptance of Rejection Identification**

- 8.1 All accepted parts or assemblies throughout the plant shall be identified by either an inspection acceptance tag or a Quality Control acceptance stamp on the routing sheet.**
  - 8.1.1 The quantity and the operations which are accepted must be clearly defined.**
- 8.2 All rejected parts or assemblies shall be segregated and tagged with a red inspection rejection tag. This tag should clearly define the quantity and reason for the rejection.**
  - 8.2.1 Parts or assemblies that Production objects to reworking shall be removed to bonded stores or a segregated area.**
  - 8.2.2 A defective material report shall be written by Quality Control describing the defects. Production and Engineering will disposition the DMR with Quality Control approval. The DMR is then presented to the Government Inspector for disposition.**
  - 8.2.3 Parts or assemblies that have been accepted after DMR approval shall be tagged with an inspection acceptance tag and placed back into production.**
  - 8.2.4 Parts or assemblies not accepted on DMR are placed into a salvage area for disassembly and removal of usable parts. Rejected parts will be returned to bonded room for scrap.**

## **9. Scrap**

**All items must be dispositioned as scrap on a DMR.**

- 9.1 Quality Control will destroy and/or Metal Stamp (SCRAP) each item.**



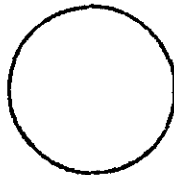
**FLOW CHART LEGEND**



**Holding Process**



**Quality Check**



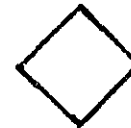
**Manufacturing Process**



**Product Inspection**



**Repair or Rework**



**Reject, Scrap or  
Return to Supplier**

**V - Visual**  
**M - Mechanical**  
**E - Electrical**

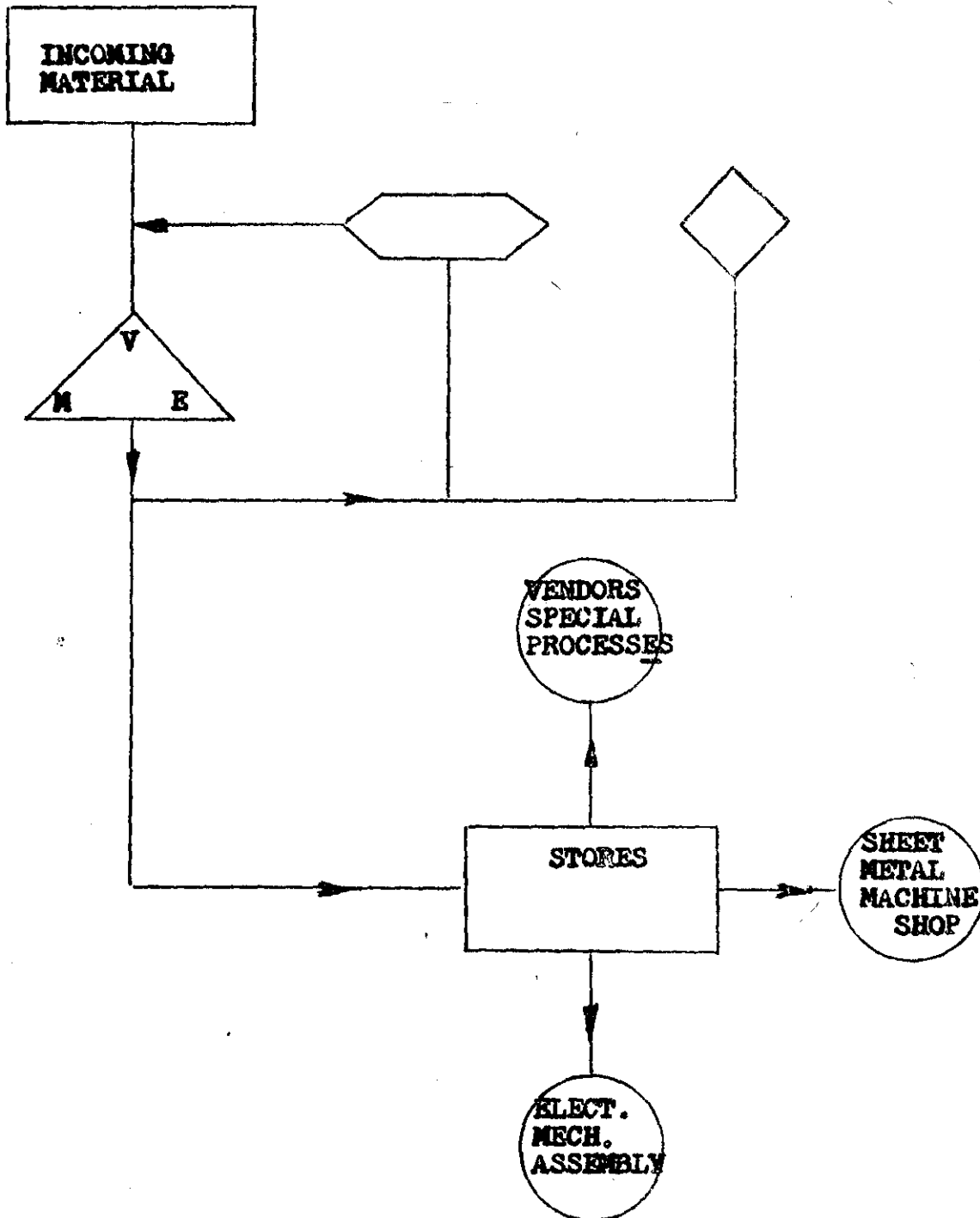
**C - Chemical**

**O - Operator Checks**

**CC - Control Chart**

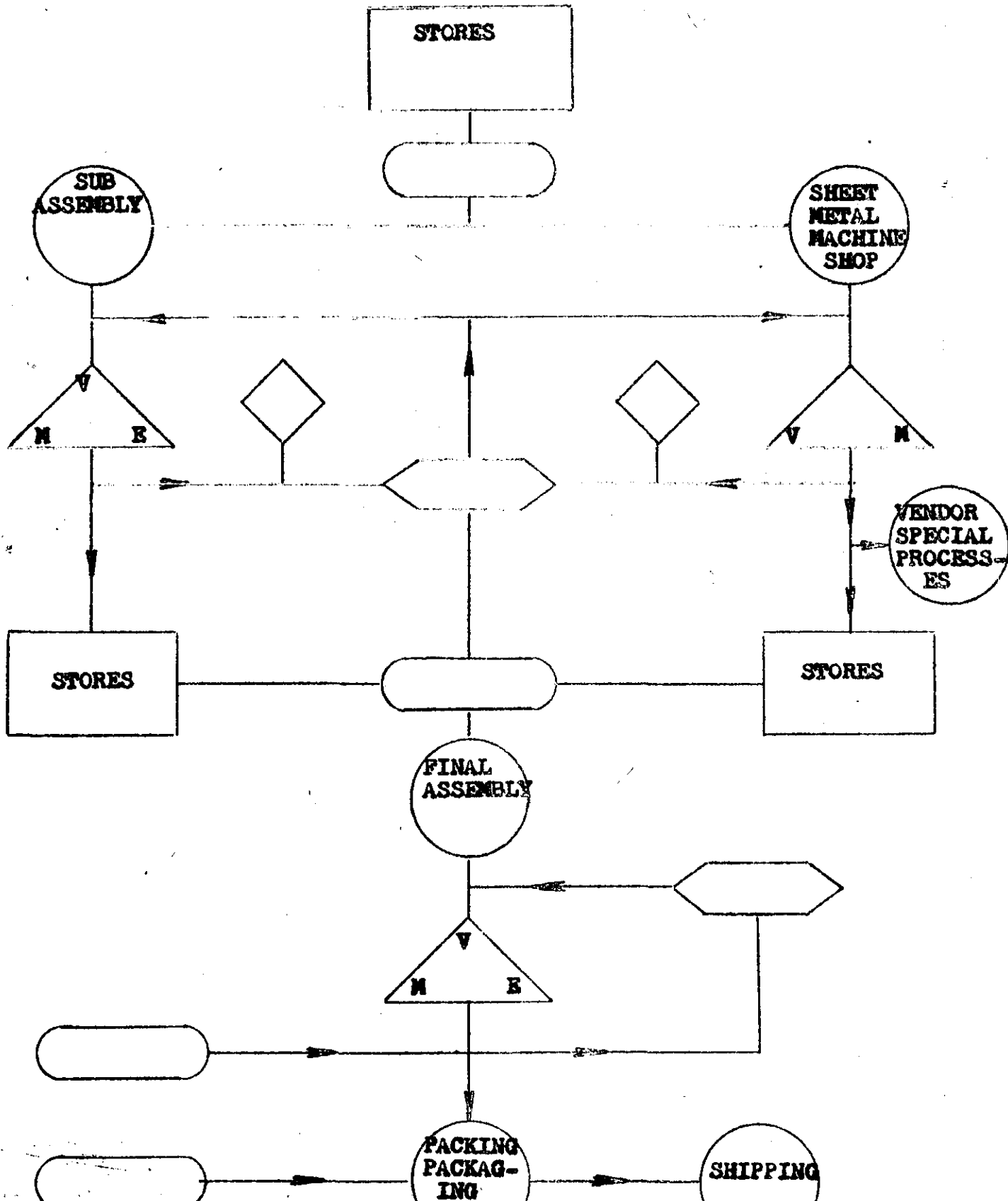


FLOW CHART #1  
RECEIVING INSPECTION





FLOW CHART #2  
IN PROCESS INSPECTION







Rev. 25 Sept. 68.74

SUBJECT: MATERIAL REVIEW

REFERENCE: MIL-Q-9858A  
MIL-45208A

PURPOSE: To determine the disposition of materials and/or parts with discrepancies or variations from approved drawings and/or specifications. To determine the necessary corrective action for prevention of recurring discrepancies or variations.

DEPARTMENTS

AFFECTED: Inspection Department, Production Department

FORMS Defective Material Report

REQUIRED: Material Review Report

GENERAL: The method for the handling of materials and/or parts which deviate from prints, specifications and accepted standards. Said procedure shall be in accordance with MIL-Q-9858A and MIL-45208A. The basic steps of the Material Review Board procedure is as follows:

1. Preliminary Review
2. Membership of Material Review Board
3. Duties of the Material Review Board
4. Authority of the Material Review Board
5. Material Review Board Action
6. Disposition of Material
7. Material Review Board Form

#### 1. Preliminary Review

- 1.1 When the material is found to be discrepant, it shall be properly identified with an Inspection Rejection Tag and placed in a specified area. The Inspector shall write a Defective Material Report, which will constitute a Preliminary Review. This Defective Material Report will explain in detail all the information pertaining to the discrepant items. The Defective Material Report number will be referenced on the Inspection Rejection Tag. The Defective Material Report will also note the location of the item. The Inspector will submit the Defective Material Report with any applicable specifications and/or drawings to the Inspection Foreman for his review. The Inspection Foreman will determine whether disposition can be made on a Preliminary Review or shall be referred to the Material Review Board for action.





- 1.1.1 Scrapped - If the material is obviously unfit for use and irreparable, it may be scrapped by the contractor with concurrence of Government Representative.
- 1.1.2 Completed - If the material does not meet requirements because of incomplete fabrication, the contractor may provide for the additional work necessary to bring the material within specified requirements.
- 1.1.3 Accepted - Acceptance of variations, corrections and repairs of variations, or replacement of parts can be made by Piasecki Aircraft Corporation without submission to the Material Review Board, based on final acceptance by the Government Representative.
- 1.1.4 Designated for Material Review Board Action - All material for which agreement cannot be reached as to acceptance "as is", rework, or scrapping in accordance with the preceding paragraphs, shall be designated for Material Review Board action.
- 1.1.5 When the Inspection Foreman decides that a "Preliminary Review" shall not adequately cover the part or parts in question, he shall immediately take the necessary steps to institute Material Review action. The Inspection Foreman shall transfer the information contained on the Defective Material Report to the Material Review Report, cross referencing the Defective Material Report number.
- 1.2 The Green Copy of the Defective Material Report shall be attached to the log so that a complete history of the part or parts affected will be available for review by the Government Inspector.
- 1.3 When the Inspection Foreman's disposition does not require Material Review Board action, the disposition will be written on the Defective Material Report and signed by the Inspection Foreman. Preliminary review does not require the signature of the Government Representative on the Defective Material Report.





- 1.4 In the event rework shall be required on a Defective Material Report, the Defective Material Report shall be returned to the inspector to be kept with the Inspection Log until the rework has been satisfactorily accomplished.
- 1.5 The inspector shall, at that time, stamp the Defective Material Report indicating the rework has been accomplished and accepted. The Defective Material Report shall then be turned over to the Inspection Office for distribution.
- 1.6 The Defective Material Report will be distributed as follows:

White Copy	-	Planning Dept.
Green Copy	-	Inspection Log
Yellow Copy	-	Inspection Files
Pink Copy	-	Production Dept.
Blue Copy	-	(Hard Copy) shall accompany part

The file folder containing the Defective Material Reports in the Inspection Office shall be made available for inspection by the Government Representative at any time he shall so request.





## 2. Membership of Material Review Board

The Material Review Board shall consist of the following members:

- 2.1 A member of the Inspection Department to be appointed by the Chief Inspector and approved by the cognizant Government Representative.
- 2.2 A member of the Engineering Department appointed by the Chief of Design and Analysis and approved by the cognizant Government Representative.
- 2.3 Representative of the cognizant Government Agent.

Members of the Board may call upon other Piasecki Aircraft or Government personnel to act in an advisory or consultant capacity. Such personnel shall not be considered voting members of the Board.





### 3. Duties of the Material Review Board

It shall be the duty of the Material Review Board to:

- 3.1 Approve Piasecki Aircraft Corporation's Material Review procedures at the plant level which are required to implement this specification.
- 3.2 Determine whether materials submitted can be used "as is", require reworking, or shall be rejected.
- 3.3 Insure that adequate records on all Material Review Board actions are maintained and are available for ready reference. Such records shall be in addition to the records of all materials rejected by Piasecki Aircraft Corporation without submission to the Material Review Board. These records shall be such that they show recurring discrepancies. All records shall be available for review and analysis by the Government.
- 3.4 Determine that Piasecki Aircraft Corporation will establish an effective follow-up control which will insure that action is taken promptly to remedy the causes of defective material submitted to the Material Review Board.





#### 4. Authority of the Material Review Board

4.1 Decisions in every case relative to acceptance shall be made by the Government Representative only after the members have made their recommendations. Acceptance shall require the concurrence of all members of the Board. Rejection can be made by any member of the board without the concurrence of all members.

4.2 Meetings of the Board shall be conducted by the Inspection member as the need shall arise. It shall also be left to the discretion of the Inspection member whether to present the facts individually or to arrange for a collective meeting of said Board members, unless one Board member desires a collective meeting. Any member of the Board may request the Board to convene to arrive at decisions on materials submitted. When an actual meeting of the Board is not required, each member may individually examine and record his recommendations on the material under review.





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## 5. Material Review Board Action

- 5.1 The Material Review Board shall take appropriate action on each item of materials referred to the Board as to acceptance, reworking or scrapping.
- 5.2 In arriving at decisions, the Material Review Board will utilize the Engineering member's recommendations. When a discrepancy has been approved by the Engineering member for acceptance "as is" or after a specified method of repair, and this action is concurred in by the Board, the Material Review Board may use this information as a reference when evaluating similar or identical cases on a limited recurrence basis. Material Review Board actions, predicated on Engineering decisions approving a discrepancy, shall not be used as routine justification for acceptance of recurring discrepancies.





## 6. Disposition of Material

- 6.1 Accept as is<sup>u</sup> - a PIAC acceptance tag shall be affixed to part or parts and distribution of Material Review Report made. When applicable, the MRR # will be stamped or etched on the part.
- 6.2 Rework - Distribution of the Material Review Report shall not be made until rework has been accomplished and accepted on a PIAC acceptance tag by the Inspector. The Inspector will remove the Rework Tags and forward the Material Review Report to the Inspection Foreman for distribution.
- 6.3 Scrap - It will be the responsibility of the Inspector on the floor to identify the item as being scrapped. The item shall be placed in a previously designated area where the Government Representative may also affix the Government Rejection Tag on the item in question. The item shall be placed in G.F.P. stores until G.F.P. will initiate Form No. DD-543 to Government Representative requesting disposition of scrapped items. Ref. Q.C.P. A-11.





## 7. Material Review Board form

- 7.1 All material on which a preliminary review indicates it should be designated for Material Review Board action shall be entered by the Inspection member on a Material Review Report (PIAC-04).
- 7.2 Presentation of Board recommendation to the Government Representative - The Board recommendation shall be submitted to the Government representative with a request for approval by Board member who is fully familiar with all phases of the evidence whereon the decision of the Board was based. Thus, if the decision hinges on considerations of a stress distribution and stress level, the Stress or Design Engineer shall explain the Board recommendations to the Government Representative. Decisions of a general nature may be explained by the Inspection Department member of the Board.
- 7.3 Material Review Report forms shall be issued numerically and a file maintained in the Inspection Office of completed material review reports.

Distribution of completed Material Review forms shall be as follows:

- 7.3.1 - Inspection Completed Reports File
- 7.3.2 - Inspection Part or Job File
- 7.3.3 - Government Representative
- 7.3.4 - Production
- 7.3.5 - Customer





SUBJECT: SCRAP CONTROL

REFERENCE: MIL-Q-5923-C  
MIL-I-45208A

PURPOSE: The Control of non-conforming material, parts, assemblies, and which are to be scrapped.

This procedure shall cover all materials, parts, sub-assemblies, received, manufactured, assembled and designated as scrap by the Material Review Board.

It should include identification, handling, disposition, and recording and such pertinent information as required.

DEPARTMENTS

AFFECTED: Inspection, Purchasing, Production

FORMS

USED: Rejection Tag - QC-122  
Defective Material Report - QC-123

GENERAL:

1. Authorization for scrapping of Parts or Material can be made only by:

1.1 By disposition of Material Review Board on Defective Material Report.

1.1.2 By Inspectors' concurrence with obvious scrap on Defective Material Report.

1.1.3 Defective Material Report Distribution:

- (a) Production Control
  - (b) Production (or Purchasing if Item is a purchased part)
  - (c) Quality Control
  - (d) Engineering
- Attached to material

1.2 SCRAP HANDLING

1.2.1 Scrapped parts shall be mutilated and/or positively identified as scrap to preclude their further use.

1.2.2 Storage will be accomplished at a minimum cost consistent with security.





- 1.2.3 Scrapped parts shall be moved to designated areas ~~outside the plant~~ *away from the manufacturing area* for disposal.
- 1.2.4 Purchased parts which are scrapped shall be held for thirty (30) days after the vendor has been notified.
- 1.2.5 If vendor requests return of scrapped parts, they shall be positively identified as unfit for use on Piasecki contracts by:
  - (a) Deeply stamping "SCRAP" on part where possible.
  - (b) Mutilating Part
  - (c) Attaching Defective Material Report to part for return work to vendor.
- 1.3 Records maintained by Quality Control shall consist of:
  - 1.3.1 Total scrap recorded on contract basis listing responsibility, Piasecki, Vendor, etc., as case may be, and percentage of scrap.
  - 1.3.2 Submit periodic scrap report to management.
- 1.4 Obvious scrap which does not require Material Review Board action may be designated as scrap by the Inspector.
  - 1.4.1 Obsolete parts through Engineering Change.
  - 1.4.2 Obviously damaged beyond repair.
  - 1.4.3 Such scrap shall be noted on a Defective Material Report together with all pertinent information, signed by the Inspector and countersigned by the Quality Control Supervisor.



**SUBJECT:** STANDARD TEST METHODS

**REFERENCE:** MIL -Q- 9858 A  
MIL-I-45208A

**PURPOSE:** To establish a control for the initiating, numbering, approving and distribution of Standard Test Methods, including a standard format and forms to follow.

**DEPARTMENTS  
AFFECTED:** All Departments

**FORMS  
REQUIRED:** Standard Test Method Form QC-139

**GENERAL:** Standard Test Methods are necessary to the performance of specific tests that are repetitive with the same requirements.

Tests performed in accordance with Standard Test Methods will assure the use of proper equipment and correct test procedure.

## 1. NUMBERING AND INDEXING SYSTEM

- 1.1 The standard test method numbers will be determined and controlled by the custodian.
- 1.2 The numbering system will be grouped to maintain a block of numbers as follows.
  - 1.2.1 001 to 099 Laboratory
  - 1.2.2 100 to 199 Quality Control
  - 1.2.3 200 to 299 Inspection
  - 1.2.4 300 to 399 Production
  - 1.2.5 400 to 499 Engineering
- 1.3 The index will indicate the number, title and date of each STM.
- 1.4 Although each STM will be identified by a number, the index will also include dash numbers as required to indicate specific types or classes within an STM.



## 2. DISTRIBUTION

2.1 The Standard Test Method Manual is for Piasecki personnel only. Manuals will not be supplied to anyone outside the Company unless approved by the custodian. A particular STM may be issued to a vendor or customer when it is so indicated on the STM.

2.2 Each manual will be serial numbered and a list of recipients maintained by the custodian to assure proper distribution of new and/or revised standards.

## 3. CUSTODIAN

3.1 Until further notice, the Quality Control Department will be responsible for the control of Standard Test Methods.

3.2 A master copy of all standards will be maintained in the office of the Quality Control Division and copies of same distributed from there.

3.3 Review. Each standard will be reviewed <sup>PERIODICALLY</sup> at ~~least yearly on its anniversary date~~ for currency and/or need in the operation. The Quality Control Division will maintain a review schedule and notify the author or his supervisor when a review is due.

## 4. ORIGIN

4.1 The need for a new standard or a revision to an old standard will be determined by the Quality Control Manager.

4.2 Author. The Quality Control Division will designate an individual to prepare the standard.

## 5. COORDINATION

5.1 Draft. The completed draft will be submitted to the Quality Control Division for approval of format and context. The Quality Control Division will prepare the typewritten copy for coordination.

5.2 Coordination. A coordination sheet, a standard form prepared and maintained by Quality Control will be attached to the typewritten draft and circulated to the interested sections for review and approval, or disapproval and/or suggested changes or recommendations.

5.3 Suspense. The reviewer will not hold the draft for more than two days. The reviewer will add any comments he desires on the coordination sheet, sign (initial) beside his name, date and forward to the next reviewer.



- 5.4 Final Review. The draft will be returned to Quality Control for final review. The draft will be returned to the originator for any changes before publication.

## 6. APPROVAL

- 6.1 Each master page will be dated and signed by the author and the approving personnel.

- 6.2 One or more of the following personnel will approve the STM.

- 6.2.1 Chief Engineer
- 6.2.2 Stress Engineer
- 6.2.3 Industrial Engineer
- 6.2.4 Laboratory Analyst Engineer
- 6.2.5 Government Quality Assurance Representative
- 6.2.6 Quality Control Manager (required on all STM's)

- 6.3 Personnel approval requirement will be determined by the custodian based on the nature of the STM.

## 7. PUBLICATION

- 7.1 The completed draft will be returned to Quality Control for typing, final approval and publication.

## 8. AMENDMENTS AND REVISIONS

- 8.1 The requirement for an amendment or revision may originate from anyone through the custodian.
- 8.2 Amendments or revisions will be processed the same as new STM's, per paragraphs 4 and 5.
- 8.3 A single page may be revised, or any number of pages.
- 8.4 The date and the revision number will be indicated on each page revised.

## 9. FORMAT

- 9.1 All standards will be written in the outline form using the decimal system.

- 9.2 The following basic outline will be used.

- 9.2.1 Equipment needed
- 9.2.2 Materials needed
- 9.2.3 Actual test process
- 9.2.4 Calculations
- 9.2.5 Criteria.



**SUBJECT:** Drawing and Change Control

**REFERENCE:** MIL-Q-9858A  
MIL-I-45208A  
Piasecki Engineering Manual  
PIAC Policies and Procedures

**PURPOSE:** To assure that drawings, drawing changes and applicable supplementary documents are in strict compliance with the latest Contract and/or Engineering Requirements. To provide a standard method of reviewing, approving and distributing drawings and changes thereto for adequacy in design, producibility, quality and inspection requirements and assuring points of effectivity with appropriate removal of obsolete drawings and changes at all points of issue and use.

**DEPARTMENTS  
AFFECTED:** All Departments

**FORMS  
REQUIRED:** Sales Work Order  
Engineering Release  
Engineering Order  
Engineering Change Request  
Planning or Routing Sheet

**GENERAL:** <sup>THE</sup> Both facilities of Piasecki Aircraft Corporation use

A Sales Work Order Number is assigned to each and every contract received. This sales order number is referenced from this point on, on every document pertaining to this contract. Every department in the company used the sales order number as the reference to the particular contract.



**1. Contract Administration**

**1.1 The Contracts Administrator, Plant Manager and/or the Sales Manager review the contract with the quotation for changes, completeness, adequacy and date of receipt.**

**1.1.1 The action is documented by initialing the contract and returning the acknowledgment of receipt and acceptance.**

**1.2 Contracts Administration assigns a Sales Order Number, sets up a Contract File Folder and prepares a Sales Work Order. Note: Re: Para. under General.**

**1.2.1 The Sales Work Order is prepared, using the applicable form and in accordance with the written Clerk's Instruction.**

**1.2.2 Distribution is made to all departments in accordance with the written Clerk's Instruction.**

**1.2.3 Upon receipt of a Sales Work Order, the Quality Control Supervisor personally reviews the contract to assure completeness and correctness of the Sales Work Order along with noting any Quality and Inspection requirements. This action is documented by initialing the contract and the inspection copy of the Sales Work Order.**

**1.2.4 All drawings and specifications received from the customer are forwarded to Engineering, Piasecki design products and standard customer products which are continually reordered. Customer design products and drawings stipulated by contract are forwarded directly to Planning.**

**1.3 Amendments to contracts are processed in the same manner with the same distribution and the Sales Work Order form with a Change Notice number.**

**1.4 Preliminary Sales Work Orders are released without benefit of the actual contract, sometimes by verbal request of the customer and/or to expedite delivery. The Contracts Administrator carries the full responsibility for this until receipt of the contract.**

**1.5 All requests from Piasecki for changes to the contract and applicable drawings or specifications are processed through the Contracts Administrator. This is documented on the Engineering Change Request form.**



- 1.6 Contracts Administration maintains a Contract Control form in which a record of all contract amendments is kept along with Shipping and Billing data.
- 1.7 When a contract is completed, a Sales Work Order is issued by Contracts Administration closing the job.

## **2. Engineering's Function**

- 2.1 Engineering maintains, controls, and issues all drawings and changes on Piasecki design products, per the Engineering Manual.
  - 2.1.1 Drawing nomenclature, format and numbering system is in accordance with the Piasecki Engineering Manual unless otherwise specified by the customer.
  - 2.1.2 Engineering maintains and controls customer's drawings on standard customer products which are continually reordered.
- 2.2 Upon the receipt of a Sales Work Order from contracts, Engineering reviews all drawings, revisions, changes and applicable specifications for compliance with the contract.
  - 2.2.1 Piasecki drawings are updated as required to comply with the current contract.
  - 2.2.2 Changes that cannot be complied with are recorded on an ECR (Engineering Change Request, Re: Para 6.11 in the Engineering Manual) and forwarded to Contracts Administration.
  - 2.2.3 The Drawing List (or Parts List) is reviewed and updated for the latest revisions and changes. This is the master list used by all departments as the latest information to the current contract and applicable amendments.
- 2.3 Engineering issues new drawings to Planning using the Engineering Release Form (ER) in accordance with Section 7 of the Engineering Manual.
  - 2.3.1 A Drawing Release Record Card is maintained.
  - 2.3.2 Engineering maintains on file the original and/or master of each drawing and change.



2.3.3 Provisions for Preliminary and Advanced Releases are found in Paragraphs 7.1 and 7.2 of the Engineering Manual.

2.4 Changes or cancellation on released drawings are issued as Engineering orders to Planning, using the Engineering Order Block on the same ER form. This procedure is outlined in Section 6 of the Engineering Manual.

2.4.1 The effectivity point is included in the change or cancellation.

2.4.2 Planning is responsible for the removal of canceled drawings in all departments.

2.5 Classified and/or security type drawings are processed in accordance with paragraph 1.9 of the Engineering Manual.

2.6 Any changes to drawings and/or applicable specifications desired from any department are processed with an Engineering Change Request form (ECR) in accordance with Paragraph 6.11 and 6.12 of the Engineering Manual.

### 3. Planning's Function

3.1 Customer drawings, changes and applicable specifications which are strictly customer design and stipulated on the customer contract are issued directly to Planning from Contracts Administration.

3.1.1 Engineering only becomes involved when Planning, Quality Control or Manufacturing request a change (ECR) or tool design is necessary.

3.2 Upon receipt of the Sales Work Order, drawings and applicable specifications, Planning reviews and checks against the quotation.

3.2.1 Prepares a Master Schedule for the individual contract which is used by all concerned as a guide to quantities and delivery requirements intended.

3.2.1.1 Master Schedule is issued to -

Production Control  
Manufacturing  
Purchasing  
Contracts Administration  
Inspection  
Engineering.



- 3.2.2 Adds the new contract to the Contract Schedule which lists all active contracts in house. This specifies actual delivery requirements.
  - 3.2.2.1 Contract Schedule is issued to all Supervisors in every department.
- 3.3 A Bill of Material is prepared which reflects each drawing number, Revision and Changes. Prepared on a standard form.
  - 3.3.1 Issued to Contracts Administration  
Purchasing  
Production Control  
Manufacturing  
Quality Control.
  - 3.3.2 Changes to Bills of Material already issued reflect the Revision and date of revision, Individual item is flagged.
- 3.4 A Material Summary is prepared on a standard form which groups the quantities of same material and hardware.
  - 3.4.1 Issued same as Bill of Material. Re: 3.3.1
  - 3.4.2 Changes affected same as Bill of Material. Re: 3.3.2
  - 3.4.3 Bill of Material is used by Purchasing as the Requisition.
    - 3.4.3.1 Before Planning issues the Bill of Material, Production Control checks material on hand which is noted on the Bill of Material.
- 3.5 A Shop Order is prepared and issued to Production Control, in three copies.
  - 3.5.1 A separate Shop Order is prepared for each manufactured detail and assembly.
    - 3.5.1.1 Duplicate Shop Orders may be issued for quantities required at different dates or for splitting lots.
  - 3.5.2 Shop Order is on a standard form which specifies the drawing number, revision and changes, and recommended sequence of operations.
  - 3.5.3 Changes required are flagged on the Master Shop Order and a new Shop Order is issued with a revision and date of revision.



3.5.3.1 Effectivity requirements on changes are noted on the revised Shop Order.

3.5.4 Removal of drawings affected from changes is performed by the expeditor who returns the drawings to Planning.

3.5.4.1 Planning may destroy the canceled drawing or stamp it void and file it in the Planning Job Folder.

3.5.5 Drawings on completed jobs are returned to Planning for filing, or returned to Engineering.

#### 4. Production Control Function

4.1 Maintains and used as guides to work and schedule requirements the Bill of Material, Material Summary, Contract Schedule and the Master Schedule.

4.2 Upon receipt of the drawings and three copies of the Shop

4.2.1 Files one copy of the Shop Order

4.2.2 Has expeditor distribute two copies of the Shop Order and the drawing to the applicable manufacturing department.

4.2.2.1 Manufacturing keeps one copy of the Shop Order and the other copy goes with the drawing into work. The Shop Order stays with the work until it is shipped or goes into an assembly.

4.3 Changes or cancellations to Shop Orders and drawings are processed the same way except that the expeditor picks up the canceled drawings and returns them to Planning and removes the old Shop Order from manufacturing. This may be destroyed.

4.3.1 On changes or splitting lots which require the inspection information to be carried over on revised Shop Orders, the expeditor must get an inspector to do this or the parts have to be inspected completely as new.

#### 5. Purchasing's Function

5.1 Prepares Purchase Orders for Material and services in accordance with the Material Summary.



- 5.1.1 Uses the Master Schedule, Contract Schedule as the guide to delivery requirements.
- 5.1.2 Uses the Bill of Material as the guide to drawing, revision and change requirements and specification requirements.
- 5.1.3 Obtains drawings as required from Planning or Engineering.
- 5.1.4 Uses the Quality Control Receiving Inspection Procedure as a guide to standard quality requirements.
- 5.2 Notifies Planning of any problems in not being able to meet delivery or drawing and specification requirements.
- 5.3 Notifies Quality Control of any problems in not being able to satisfy Quality or Inspection requirements.

## **6. Quality and/or Inspection**

- 6.1 Upon receipt of Sales Work Order, reviews contract for inspection requirements.
  - 6.1.1 Inspection and test requirements are reviewed with the QAR.
- 6.2 Prepares Flow Plans, Inspection Logs, Check List, Test Reports as required to satisfy contract and quality requirements.
- 6.3 Uses the Master Schedule and Contract Schedule as a guide to fulfilling inspection requirements within schedule.
- 6.4 Uses the Bill of Material as the guide to correct drawings and specifications being used during inspection and test.
- 6.5 Picks up and files all completed Shop Orders on details and assemblies that are shipped or used on next assembly.



**SUBJECT -** ELECTRONICS

**REFERENCE -** AIRBORNE AND GROUND EQUIPMENT

**PURPOSE -** To establish standards of workmanship necessary to the manufacture of Airborne and Ground Electronic Equipment in accordance with Government Specifications.

**DEPARTMENTS AFFECTED -** PRODUCTION, ENGINEERING, ELECTRONICS LABORATORY

**FORMS REQUIRED -** INSTRUMENT CONTROL CARDS, CALIBRATION LABELS

**GENERAL -** The general manufacturing processes and workmanship shall be the same for Airborne and Ground Electronic equipment but the acceptance quality levels shall differ in accordance with the type equipment being manufactured and the customer requirements.

Unless otherwise specified by the customer or Piasecki Engineering for a particular item, standards and methods of manufacturing as described in this procedure shall be adhered to by Piasecki Aircraft Corporation and its vendors.

The methods of performing Inspection for Electronics in Receiving, Processing and Shipping shall conform to procedures in the Quality Control Manual for that particular phase. Accepting, rejecting, reworking, Material Review etc. shall also conform to procedures set up in the Quality Control Manual.





PIASECKI AIRCRAFT  
CORPORATION

## QUALITY CONTROL MANUAL

Q. C. F.  
PAGE  
DATE ISSUED  
DATE REV.

C-1  
2 of 2  
20 Oct 59  
30 Jan 60

### GENERAL -

The standards and methods set forth in this procedure are segregated in the following categories.

#### 1. ELECTRONICS

- C - 2 Soldering
- 3 Solderless Connectors
- 4 Wiring
- 5 Cabeling
- 6 Bonding
- 7 Welding
- 8 Hardware
- 9 Riveting
- 10 Printed Circuit Wiring
- 11 Potted Filters
- 12 Potted Connectors
- 13 Terminal Board Symbolization
- 14 Terminal Board Staking
- 15 Marking
- 16 Finish
- 17 Final Inspection
- 18 Acceptance Quality Levels
- 19 Instrument Control
- 20 Equipment List
- 21 Related Military Standards List



## 2. SOLDERLESS CONNECTORS

### 2.1 General

The solderless terminal or connector is a pressure type electrical connection designed with close tolerance dimensions. It differs from a solder joint in that the connection depends on pressure rather than the alloying action of the solder. Exhaustive tests have proven that the efficiency of solderless connections is equal to that of soldered ones.

### 2.2 Theory of Operation

The common type of solderless terminal is the straight tongue and split barrel type. The tongue is of little importance, its design and shape being largely dependent on specific application requirements. The barrel or sleeve part is designed to exact OD and ID dimensions, wall thickness and length, all of which are dependent on the wire gage to be terminated.

### 2.3 Solderless connectors shall be inspected for the following items:

- 2.3.1 Solderless type terminals must be applied only on stranded wire conductor and the strands should not be twisted.
- 2.3.2 The solderless terminal must be the correct size for the wire. This may be determined by the manufacturer's color coding, or by the size range marking on the terminal.
- 2.3.3 An approved crimping tool or the dies utilized in automatic application of terminals must be the correct size or configuration for the terminal used. Incorrect size crimping tools are evidenced by the spacing or shape of the die marks on the terminal.
- 2.3.4 Improper Crimping - evidenced by relative motion between the terminal and the conductor.
- 2.3.5 The terminals applied to the wire must not be damaged in any manner which would affect the termination when subjected to environmental extremes, such as, shock, vibration, etc.



- 2.3.6 The wire must be flush or extend through the barrel for a distance not exceeding 1/16 inch.
- 2.3.7 The end of the wire must not exhibit a round shape after crimping operation.
- 2.3.8 Pre-insulation Damage - prior to and after the crimping operation of a solderless type connector there must be no evidence of damage to the insulating sleeve on the lug. The sleeve material must not be damaged to the extent that a potential short circuit would result.





## 4 WIRING

4.1 General - Improper placing or dressing of wires or cable may cause serious operating difficulty because of spurious oscillation, restriction of mechanical operation etc. Frayed, burned or pinched insulation could cause short circuits or current leakage that would seriously interfere with proper operation of equipment in service. Improper termination under strain could result in breakage of the conductors due to metal fatigue. Exposure to extremes of temperature, humidity, vibration, shock, barometric pressure and overload must be a factor of consideration for failure.

### 4.2 Wiring Standards

4.2.1 Broken Strands - Conductors must not contain more than 10% missing strands or strands damaged by nicking, scraping etc.

Example:

0 to 7 strands - No damaged strands allowed

8 to 19 strands - 1 damaged strand allowed

20 and above - 2 damaged strands allowed

4.2.2 Insulation - Insulation stripping should be done mechanically using only tools specifically designed for this purpose. Adjustable strippers, knives, razor blades, etc., should not be used as they may damage the wires when wire with coated insulation is used, the coating should be removed with a suitable solvent or heat.

The wiring insulation must be inspected for the following items:

4.2.2.1 Insulation must be complete, intact and free from damage such as abrasions, cuts, burns, pinches, tears, fraying etc.

4.2.2.2 The maximum length of bare wire between the wire insulation and the connection should not exceed 1/16".



#### 4.2.2 Insulation (Cont)

4.2.2.3 Ends of the fabric insulation should not be frayed and properly coated with an approved varnish conforming to specification MIL-V-173. (#1557 Glyptal or equivalent)

4.2.2.4 The insulation must not be allowed to extend into the soldered joint as this will cause a poor connection.

4.2.2.5 This criteria is also applicable to sleeving including the following

4.2.2.5.1 Sleeving when used must be tied in place to prevent movement away from the joint its protecting.

4.2.2.5.2 Sleeving used between connections should be continuous.

#### 4.2.3 Wire Dress

4.2.3.1 A wire dress sample will be made by the development wireman. When this is complete, it should be approved by the interested Manufacturing personnel, Design Engineering, Quality Control and Inspection. On new designs, Engineering will specify any special requirements (such as wire runs, clamps, sleeving, etc.) they may require. When no special requirements are specified, the development wireman will select the best route for cabling, location of clamps, protective sleeving, etc.

4.2.3.2 When the wire dress sample is approved by the above personnel, they will signify their approval by signing a card attached to the unit. This unit will then become a prototype and be used as a sample to measure all subsequent units. They should all be consistent within reason





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4.2.3 Wire Dress (Cont)

4.2.3.3 On wire templates and jigs, the development wireman will select the best sequence of laying wires and mark the running list with this sequence after approval by Quality Control and Inspection. No changes will be made in the sequence without approval. The sequence should as much as possible eliminate crossovers in the cable. The wires should be straightened and formed to make a neat round cable as tying is done. All knots must be coated with G.E Red Glyptol #1201.

4.2.3.4 The placement, location, positioning and arrangement of wires must be assembled and inspected as follows:

4.2.3.4.1 Placement as specified by engineering and permitting sufficient slack only to facilitate displacement of parts and Sub-Assemblies for actual operation and inspection without disconnecting circuits or creating taut wires that cause undue stress on connectors. All jumper wires should be mounted first so they will be below the components (resistors, capacitors etc.) to allow for easy replacement of components if necessary. Small components may be supported by their own leads. Resistors, capacitors, etc. which are 3/8 inch in diameter or larger and 1 3/4 inch long or longer must be secured by wire or a suitable clamp.

4.2.3.4.2 Location with regard to improperly routed wires or cables that result in a jammed, bulky arrangement causing, or that may cause, interference with, or distortion of components, especially the mechanical operation of parts. Wires and cables should be so located that inductive and capacitive effects, unless used as a design feature of the equipment, will be the minimum practicable.





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### 4.2.3.4 (Cont)

4.2.3.4.3 Positioning with consideration of sharp abrasive corners, bottoms of screws, nuts, lugs etc. that might tend to wear the insulation off, where due to design problems of the unit it is impossible to reroute the offending wires or cables, the wire or cable should be suitably raised from the chassis by addition of insulated spacers or wrapped with approved tape at the necessary points. Wires to cables should not be bent around any corners or edges that may cut or abrade them under normal service conditions. All screw threads adjacent to wires and cables should be protected where there is danger of chaffing or in any way damaging the insulation. This may be done by sliding dilated sleeving over the screw threads or when screw is too short to hold sleeving, it can be coated with Gyptal and let dry. The wire shop should take the initiative in determining which screws need protection. Inspection will check and approve at the time wire dress sample is submitted for approval.

4.2.3.4.4 Arrangement with care in lieu of a careless haphazard appearance resulting from poor workmanship, arranged to facilitate inspection and field repairs so that all solder joints or other terminations are readily accessible. Clearance between wires or cables and parts, such as, electron tubes, resistors, dynamotors etc., should be sufficient to avoid deterioration of the wire or cable because of the heat dissipated by such parts.



#### 4.2.4 Protection

4.2.4.1 Wires and cables shall be so placed and protected as to avoid contact with rough or irregular surfaces, sharp edges, feed thru holes and clamps. Whenever wires or cables run through holes in metal, (partitions, shields, etc.) less than 1/8 of an inch in thickness, the holes shall be equipped with suitable grommets, bushings or cushioned clips for mechanical protection or insulation subject to abrasion. For metal thickness of 1/8 inch or more the hole edges must be rounded to radius equal to one half the thickness of material, if a grommet is not used.

4.2.4.2 Wires and cables shall be properly supported and secured to prevent undue stress on conductors and terminals and undue changes in position of wires and cables after the equipment has been subjected to specified service conditions or has been repaired in a normal manner. Wires and cables shall not be secured to metal frame or chassis without intermediate insulation.

4.2.5 Coding Circuits may be marked as specified by the engineer with either prestamped sleeves or by stamping the identification directly on the wire. Wrap around adhesive tape markers may be used on development work only.

Wires to be marked shall be marked on both ends with the proper circuit number as shown on the drawing reading from the end of the wire. Short lengths of wire (6 inches or less) used as jumpers need not be marked. Wires smaller than A.W.G. 20 should not be stamped as the wire is too small.





4 WIRING

4.2.5 Coding (Cont)

4.2.5.1 Individual wires should be suitably color-coded to facilitate tracing circuits and making repairs. Colors shall be as specified if called for on the drawing. Otherwise, colors will be established by the wire shop on the wire dress sample and remain consistent on all subsequent units. If the number of wire runs exceeds the number of colors available, colors used more than once should be located as far apart as possible. Where a system of color-coding is not specified, it is desirable that MIL-STD-122, "Color-Code for Chassis Wiring For Electronic Equipment" be used as shown in the following table.

4.2.5.2 <u>Circuit</u>	<u>Color</u>
Grounds, grounded elements, and returns..	Black
Heaters or filaments, off-ground.....	Brown
Power Supply B plus.....	Red
Screen Grids.....	Orange
Cathodes.....	Yellow
Control Grids.....	Green
Plates.....	Blue
Power Supply, minus.....	Violet (Purple)
AC Power Lines.....	Gray
Miscellaneous, above or below ground returns, AVC, etc.....	White
<del>Screen Grids</del>	<del>Orange</del>

4.2.6 Termination Requirements

4.2.6.1 Shield termination - shield must not be cut, frayed or otherwise broken open exposing the wire intended to be shielded or producing loose strands of shielding braid. Shields which are to be grounded must use AWG 20 insulated wire for the pig tail. Shields terminated by the electro-fuse "Termashield method," must not show signs of insulation damage or excess fraying of shields. Shielded wire must have the shielding braid removed 1/4 to 1/2 inches beyond the end of the insulation.



#### 4.2.6

4.2.6.2 All wires should be securely fastened at their termination by crimping the terminals firmly upon the wire, including insulation wherever design feature of terminals permit, or by crimping or wrapping the wires upon the terminals, or by other equally effective means, so as not to depend upon solder for mechanical strength. Soldering leads, lugs and terminals should be tinned, silverplated or lead-coated. Wires subject to movement during specified operation of equipment should be provided with terminals that grip the wire insulation.

#### 4.2.7 Splicing

4.2.7.1 Wires should not be spliced on production equipment without the approval of the Engineer. For development and modification work, splicing may be done with approved butt connectors. Only tools specifically designed by the manufacturer for these connectors may be used. Extreme care in selecting the proper connector and making the splices is necessary.

### 4 WIRING

#### 4.3 Inspection Check List

- 4.3.1 Stripped wire ends for nicks, broken strands etc.
- 4.3.2 Insulation for damage and fraying.
- 4.3.3 Length of bare wire between insulation and connection approximately 1/16".
- 4.3.4 Sleeving is tied down, continuous and not damaged or frayed.
- 4.3.5 Hole insulation or radiused hole edges.
- 4.3.6 Wire placed or protected against sharp edges abrasive surfaces etc.
- 4.3.7 Sufficient slack in wires, permitting operation without causing undue strain.





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4.3 Inspection Check List (Cont)

4.3.8 Neatly routed wires with no bulky haphazard appearance, permitting access for servicing.

4.3.9 Properly coded

4.3.10 Properly supported & insulated against the chassis.



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# **PiAC Material Safety Data Sheets (MSDS)**

## **Book 1**



LIST OF MATERIALS

- 1 M-BOND 200 ADHESIVE
- 2 M-BOND 200 CATALYST C
- 3 M-BOND CURING AGENT - TYPE 10
- 4 M-BOND AE RESIN
- 5 M-LINE 201A-20R SOLDER
- 6 SPC-NF CLEANER/REMOWER
- 7 CSM-1A DEGRASSER
- 8 M-LINE RSK-1 ROBIN SOLVENT
- 9 M-PREP CONDITIONER A
- 10 M-DEP NEUTRALIZER SA
- 11 HYCOL EA 934 UA AT SPRAY A & B
- 12 ALODINE 1801
- 13 MOBILE JET OIL II
- 14 E-761 EPOXY GRAPHITE PREPREG
- 15 PRIMER EPOXY GREEN/METAL
- 16 PF 7035C, FR-7035 F/K
- 17 KRYCON, SPRAYON, SHIELDING SPRAYON, PRIMER
- 18 MOBILE DTE 30<sup>W</sup> EXTRA HEAVY OIL
- 19 MOBILE DTE #10<sup>W</sup> OIL
- 20 VACUUM PUMP OIL
- 21 VARCOL 1 SOLVENT
- 22 EPOXY THINNER MIL-T-81772 B
- 23 RAYCHEM
- 24 M-DEP NEUTRALIZER SA



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Prep Neutralizer 5A

December 8, 2000

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS #** MGM048H

919-365-3800

**CHEMTREC** 800-424-9300 (U.S.)  
703-527-3887 (Outside U.S.)

**NOTE:** CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
1336-21-6	Ammonium Hydroxide	<0.02
7601-54-9	Trisodium Phosphate	<0.05
1303-96-4	Sodium Tetraborate Pentahydrate	<0.01
7732-18-5	Distilled Water	99.92

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

**Inhalation:** YES   **Skin:** YES   **Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** Ammonium hydroxide is irritating and corrosive to body tissues and a sensitized person may react to even dilute solutions.

### Carcinogenicity:

NTP:	Not listed
IARC Monographs:	Not listed
OSHA Regulated:	Not listed



**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**Steps to be taken if material is released or spilled:** Ventilate area. Absorb with absorbent material. Neutralize with dilute acid. Flush spill area with plenty of water.

**SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION**

**Respiratory Protection:** For air contaminants above TLV or permissible limits use NIOSH approved respirator for organic vapors.

**Ventilation:**

**Local Exhaust:** Keep below TLV

**Mechanical:** Keep below TLV

**Special:** N/A

**Other:** N/A

**Protective Gloves:** Neoprene or rubber gloves are recommended.

**Eye Protection:** Full face shield or chemical safety goggles are recommended.

**Other Protective Clothing or Equipment:** Rubber apron is recommended. Safety shower and eyewash should be available in work area.

**Work / Hygienic Practices:** Use good housekeeping practices. Wash thoroughly after use.

**SECTION 8: HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:** Store below 80°F (27°C) in dry place. Keep containers tightly sealed.

**Other Precautions:** Avoid breathing vapors and direct contact.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Boiling Point:</b>	212°F (100°C)
<b>Vapor Pressure (mmHg):</b>	760 mmHg @ 100°C
<b>Vapor Density (Air = 1):</b>	1.0
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	1.0
<b>Melting Point:</b>	32°F (0°C)
<b>Evaporation Rate (BuAc = 1):</b>	<1
<b>Volatile Organic Compounds:</b>	0%
<b>Solubility in Water:</b>	100%

**Appearance and Odor:** Colorless liquid; mild ammonia odor.



**SECTION 13: TRANSPORTATION INFORMATION**

SHIPPING NAME	CLASS	UN NUMBER
Corrosive Liquids, N.O.S. (Ammonium Hydroxide)	8	1760

**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
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NONE

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

**SECTION 15: OTHER INFORMATION**

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g)(2)(c)(1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Measurements Group, Inc. specifically disclaims any and all form of liability and/or responsibility for the application of this product.



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Prep Conditioner A

December 8, 2000

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS #** MGM046H

919-365-3800

**CHEMTREC** 1-800-424-9300 (U.S.)  
703-527-3887 (Outside U.S.)

**NOTE:** CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
7664-38-2	Phosphoric Acid	5.0-6.0
7732-18-5	Distilled Water	90.0
NA	Non-hazardous	Balance

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

**Inhalation:** YES    **Skin:** YES    **Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** None known.

<b>Carcinogenicity:</b>	<b>NTP:</b>	Not listed
	<b>IARC Monographs:</b>	Not listed
	<b>OSHA Regulated:</b>	Not listed

### Signs and Symptoms of Exposure:

**INHALATION:** May cause severe irritation of respiratory system. In confined areas, vapors in high concentrations are anesthetic. Over-exposure may result in light-headedness and staggering gait. Mist may cause coughing, sneezing, salivation, and difficult breathing.



**SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION**

**Respiratory Protection:** Self-contained breathing apparatus is recommended for emergency use.

**Ventilation:**

**Local Exhaust:** Keep below TLV

**Mechanical:** Keep below TLV

**Special:** N/A

**Other:** N/A

**Protective Gloves:** Chemical resistant or rubber gloves recommended.

**Eye Protection:** Chemical safety glasses and faceshield recommended.

**Other Protective Clothing or Equipment:** Rubber apron or suitable protective clothing. Eye wash station and safety shower should be available in the work area.

**Work / Hygienic Practices:** Wash hands thoroughly after using.

**SECTION 8: HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:** Store below 80°F (27°C). Keep containers tightly sealed. Avoid storing or mixing with materials containing chlorine.

**Other Precautions:** Avoid eye and skin contact. Avoid breathing mist.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**Boiling Point:** 210°F to 212°F (99°C to 100°C)

**Vapor Pressure (mmHg):** N/A

**Vapor Density (Air = 1):** N/A

**Specific Gravity (H<sub>2</sub>O = 1):** 1.36

**Melting Point:** N/A

**Evaporation Rate (BuAc = 1):** <1

**Volatile Organic Compounds:** None

**Solubility in Water:** Complete

**Appearance and Odor:** Clear to slightly turbid liquid; no odor.



**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

<b>CAS NUMBER</b>	<b>CHEMICAL NAME</b>	<b>% BY WEIGHT</b>
7664-38-2	Phosphoric Acid	5.0-6.0

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

**SECTION 15: OTHER INFORMATION**

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g)(2)(c)(1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Measurements Group, Inc. specifically disclaims any and all form of liability and/or responsibility for the application of this product.



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Line 361A-20R Solder

January 2, 2001

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS #** MGM039F

919-365-3800

CHEMTREC 1-800-424-9300 (U.S.)  
703-527-3887 (Outside U.S.)

**NOTE:** CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
7440-31-5	Tin	63.00
7439-92-1	Lead	36.65
7440-36-0	Antimony	0.35
8050-09-7	Rosin	<3.0

## SECTION 3: HEALTH HAZARD DATA

**Routes of Entry:**

**Inhalation:** YES    **Skin:** YES    **Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** Breathing fumes during soldering may cause respiratory system irritation, headache, and irritation of mucous membranes. Smoke during soldering will contain resin which is an allergen and can cause respiratory system irritation and damage. Repeated ingestion of lead can result in systemic poisoning.



**Special Firefighting Procedures:** Use NIOSH approved self-contained breathing apparatus in case of toxic lead fumes.

**Unusual Fire and Explosion Hazards:** Flux in cored solder may ignite when the solder melts in a fire.

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

**Steps to be taken if material is released or spilled:** Melted solder will solidify on cooling and can be scraped up. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

#### SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION

**Respiratory Protection:** Usually not required. When ventilation is not sufficient to remove fumes from the breathing zone, a cartridge type respirator should be worn.

**Ventilation:** Provide adequate exhaust ventilation (general and/or local) if necessary to meet exposure requirements. Local exhaust ventilation is preferred to minimize dispersion of smoke and fumes into the work area.

**Protective Gloves:** Not usually required.

**Eye Protection:** When soldering, use goggles or face shield.

**Other Protective Clothing or Equipment:** None

**Work / Hygienic Practices:** Wash hands thoroughly after handling solder containing lead and before eating, drinking or smoking.

#### SECTION 8: HANDLING AND STORAGE

**Precautions to be taken in handling and storing:** Store away from sources of sulfur. Wash hands after handling solder containing lead. Avoid breathing smoke or fumes generated during soldering. Do not place flux cored solder into a hot solder pot since flux may ignite.

**Other Precautions:** None known.



**Antimony**

OSHA PEL: 0.5 mg/m<sup>3</sup>  
ACGIH TLV: 0.5 mg/m<sup>3</sup>  
OTHER: INGESTION (Rat) LD<sub>50</sub> 7.0 g/kg

**Rosin**

OSHA PEL: N/E  
ACGIH TLV: N/E  
OTHER: N/E

**SECTION 12: DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:** Solder can be reclaimed. Disposal should be in accordance with local, state, and federal regulations.

**SECTION 13: TRANSPORTATION INFORMATION**

SHIPPING NAME	CLASS	UN NUMBER
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Not required -- Shipped as non-hazardous article.

**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
7439-92-1	Lead	36.65
7440-36-0	Antimony	0.35

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).



## **Attention Transporters**

This product is being shipped as a "Chemical Kit".

Chemical kit, as defined by IATA, "are boxes, cases, etc., containing small amounts of various dangerous goods used for analytical or other purposes."



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Bond Curing Agent - Type 15

March 27, 2000

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS # MGM006F**

919-365-3800

CHEMTREC 1-800-424-9300 (U.S.)  
703-527-3887 (Outside U.S.)

NOTE: CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
104-78-9	3-Diethylaminopropylamine	100

## SECTION 3: HEALTH HAZARD DATA

**Routes of Entry:**

**Inhalation:** YES    **Skin:** YES    **Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** None known.

<b>Carcinogenicity:</b>	NTP:	Not listed
	IARC Monographs:	Not listed
	OSHA Regulated:	Not listed



## SECTION 6: ACCIDENTAL RELEASE MEASURES

**Steps to be taken if material is released or spilled:** Evacuate area. Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Absorb with sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material clean-up is complete.

## SECTION 7: EXPOSURE CONTROLS – PERSONAL PROTECTION

**Respiratory Protection:** NIOSH / MSHA approved respirator.

**Ventilation:**

**Local Exhaust:** May be necessary for some operations to prevent the heavier than air vapors from collecting and causing eye, skin, or mucous membrane irritation.

**Special:** Handle in chemical fume hood. Do not breathe vapor.

**Mechanical:** N/A

**Other:** N/A

**Protective Gloves:** Chemical resistant rubber gloves are recommended.

**Eye Protection:** Safety goggles are recommended.

**Other Protective Clothing or Equipment:** Chemical resistant clothing is recommended. Should have access to safety shower and eyewash station in local area.

**Work / Hygienic Practices:** Wash thoroughly after handling.

## SECTION 8: HANDLING AND STORAGE

**Precautions to be taken in handling and storing:** Do not breathe vapor. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Readily absorbed through skin. Wash thoroughly after handling.

**Other Precautions:** Corrosive. Toxic. Harmful liquid. Keep tightly closed. Keep away from heat and open flame. Store in a cool dry place.



**SECTION 13: TRANSPORTATION INFORMATION**

SHIPPING NAME	CLASS	PACKING GROUP	UN NUMBER
Diethylaminopropylamine (Flammable Liquid & Corrosive)	3/8	II	2684

**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
NONE		

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

**SECTION 15: OTHER INFORMATION**

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g)(2)(c)(1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Measurements Group, Inc. specifically disclaims any and all form of liability and/or responsibility for the application of this product.

**PREPARED BY:** R. L. Fridley

**DATE:** March 27, 2000



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Bond AE Resin

March 9, 2000

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS #** MGM014F

919-365-3800

CHEMTREC 1-800-424-9300 (U.S.)  
703-527-3887 (Outside U.S.)

**NOTE:** CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
1675-54-3 & 25085-99-8	Reaction products of Epichlorohydrin and Bisphenol-A (Epoxy Resin)	93.0
122-60-1	Phenyl Glycidyl Ether	4.0
108-46-3	m-Dihydroxybenzene	3.0
106-89-8	Epichlorohydrin*	<50 ppm

\*NOTE: This material can be present as a residual from Phenyl Glycidyl Ether and Epoxy Resin manufacturing. Further studies may establish a carcinogenic effect of this material on the human.

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

**Inhalation:** YES   **Skin:** YES   **Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** May cause irritation. Long-term skin exposure may cause burns.



**INGESTION:** Give large amounts of water or milk. Do NOT induce vomiting unless directed to do so by a physician. Transport to a medical facility.

**NOTE TO PHYSICIAN:** No specific antidote. Provide supportive care. Treatment should be based on the judgement of the physician in response to reactions of the patient.

#### SECTION 5: FIRE AND EXPLOSION HAZARD DATA

**Flash Point (Method Used):** 200°F (93°C) PMCC

**Flammable limits:** LEL: Unknown UEL: Unknown

**Extinguishing Media:** Carbon dioxide, dry chemical, foam.

**Special Firefighting Procedures:** In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

**Unusual Fire and Explosion Hazards:** Use water spray to cool fire exposed containers and fire affected area until fire is out and danger of re-ignition is passed. Sealed containers may rupture when heated.

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

**Steps to be taken if material is released or spilled:** Soak up in absorbent material such as sand and collect in suitable containers. Residual resin may be removed using steam or hot soapy water. Solvents are not recommended for clean up. Keep spark producing equipment away. For large spills, evacuate upwind of spills and contain with dike.

#### SECTION 7: EXPOSURE CONTROLS – PERSONAL PROTECTION

**Respiratory Protection:** If exposure exceeds occupational exposure limits, use a NIOSH-approved respirator. A system of local and/or general exhaust is recommended to keep employee exposures below the airborne exposure limit.

**Ventilation:**

<b>Local Exhaust:</b>	Local exhaust ventilation is generally preferred because it can control the emission at the source.
<b>Mechanical:</b>	Keep below TLV.
<b>Special:</b>	N/A
<b>Other:</b>	N/A

**Protective Gloves:** Neoprene or polyethylene gloves recommended.

**Eye Protection:** Chemical safety glasses recommended.



**SECTION 11: TOXICOLOGICAL INFORMATION**

Reaction products of Epichlorohydrin and Bisphenol-A  
(Epoxy Resin)

OSHA PEL:	Not known
ACGIH TLV:	Not known
OTHER:	LD <sub>50</sub> ORAL (RAT) >5000 mg/kg
	LD <sub>50</sub> SKIN (RABBIT) 20,000 mg/kg

m-Dihydroxybenzene

OSHA PEL:	10 ppm (TWA)
ACGIH TLV:	10 ppm (TWA)
OTHER:	20 ppm (STEL)

Phenyl Glycidyl Ether

OSHA PEL:	1 ppm (TWA)
ACGIH TLV:	1 ppm (TWA)
OTHER:	LD <sub>50</sub> ORAL (RAT) 3.85 g/kg
	LD <sub>50</sub> ORAL (MOUSE) 1.40 g/kg
	LD <sub>50</sub> SKIN (RAT) 2.16 g/kg
	LD <sub>50</sub> SKIN (MOUSE) 2.99 g/kg
	LC <sub>50</sub> INH (RAT) >100 ppm (8 HR)
	LC <sub>50</sub> INH (MOUSE) >100 ppm (4 HR)

Epichlorohydrin

OSHA PEL:	2 ppm (TWA)
ACGIH TLV:	2 ppm (TWA)

**SECTION 12: DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:** Any disposal practice must be in compliance with all federal, state, and local laws and regulations.



# Raychem

## MATERIAL SAFETY DATA SHEET

Issue No: 1

Effective Date: June 1997

Serial No.: RAY/3525

AS WITH MANY PLASTIC COVERED MATERIALS, THESE PRODUCTS CAN GENERATE HAZARDOUS THERMAL DECOMPOSITION AND COMBUSTION EMISSIONS IF THE PLASTIC COMPONENTS ARE CHARRED OR BURNED. EXCEPT WHEN CHARRED OR BURNED, THE HANDLING AND USE OF THESE WIRE AND CABLE PRODUCTS PRESENT NO KNOWN HAZARDS. CHARRING OR BURNING CAN OCCUR, FOR EXAMPLE, DURING THERMAL STRIPPING OR LASER PRINTING.

### PRODUCT IDENTIFICATION

This MSDS is furnished for Wire and Cable products which have similar properties but which may emit dissimilar thermal degradation byproducts if charred or burned. For more specific information, please call (415) 361-4907.

Product Name: Wire & Cable Products

Chemical Name: Not applicable, mixture

CAS #: Not applicable, mixture

DOT Proper Shipping Name: Not regulated

DOT Identification No.: Not regulated

DOT Hazard Classification: Not regulated

TSCA Inventory Status: All ingredients are listed or exempt

Manufacturer: Raychem Corporation  
300 Constitution Drive  
Menlo Park, CA 94025

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE or ACCIDENT

Call CHEMTREC - Day or Night - 1-800-424-9300 Toll free in the continental U.S., Hawaii, Puerto Rico, Canada, Alaska or Virgin Islands. For calls originating elsewhere: (703) 527-3887 (collect calls accepted)

For non-emergency health and safety information, call: (415) 361-4907

### HAZARDOUS INGREDIENTS

These products present no hazards unless the plastic components are heated to the point of charring or burning, such as can occur in laser printing or thermal stripping operations. During such operations, these products can release hazardous thermal decomposition and combustion byproducts.

Base polymer jacket materials include polyethylene and olefin copolymers, fluoropolymers, chloropolymers, polyamides, polyesters, and silicones. Conductor materials include various metal alloys (see product literature for identification of specific alloys).

### PRODUCT APPLICATIONS

Raychem Wire and Cable products are small and lightweight, and rugged. They offer thermal, electrical, and mechanical performance and chemical resistance, and can be used in a variety of market applications including rail and transit, automotive, commercial aerospace, defense, medical, marine, and commercial electronics.

### PHYSICAL PROPERTIES

Appearance and Odor: Wires and cables in a variety of shapes, sizes and colors. Some products may have a slight odor.

Boiling Point: Not applicable

Vapor Pressure (mm Hg @ 20°C): Not applicable

Volatility (% by Volume): Not applicable

Vapor Density: Not applicable

Specific Gravity (Water=1): Not applicable

Evaporation Rate: Not applicable

Flash Point (°F)/Method: Not applicable

Solubility In Water (%): Insoluble

Flammable Limits in Air (volume %): Lower Not applicable Upper Not applicable



**Protective Clothing:** If there is a danger of hot products contacting the skin or eyes, use eye/face protection and heat resistant gloves.

**Transportation:** These products are non-hazardous under Department of Transportation Regulations 49, CFR Section 171.8, IATA, IMO, and AFR 71-4. Because there are no applicable shipping regulations for these products, labels are not required on the outside shipping container and all products may be shipped through the U.S. Postal Services.

**Disposal:** This product is a non-hazardous waste in accordance with Federal U.S. EPA regulations. Wastes of this product may be recycled to recover metal values. Classification according to all local and state hazardous waste regulations is required before disposal. If there are local regulations covering the controlled incineration of halogenated materials, then all halogen-containing products will be subject to such regulations. Refer to the product literature for identification of halogen-containing products.

## EMERGENCY AND FIRST AID PROCEDURES

**Eyes:** If eye irritation occurs, hold eyelids apart and flush affected area(s) with clean water. Seek medical attention.

**Skin:** First aid is normally not required. After handling product, it is good work practice to wash your hands.

**Ingestion:** Not a normal route of exposure. However, if swallowed and symptoms develop, seek medical attention.

**Inhalation:** If respiratory symptoms or other symptoms of exposure develop, move victim to fresh air. If symptoms persist, seek medical attention. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention. If victim is not breathing, immediately begin artificial respiration. Keep victim warm and quiet; seek immediate medical attention.

**Steps to be Taken in Case of Release or Spill:** Sweep up and collect in a suitable container for disposal or reuse.

**Unusual Fire and Explosion Hazards:** Toxic fumes may be given off in a fire. See also sections on Thermal Degradation and Combustion Byproducts and Other Precautions.

**Special Fire Fighting Procedures:** Firefighters should wear self-contained breathing apparatus with a full facepiece operated in the positive demand mode when fighting fires.

**Extinguishing Media:** carbon dioxide      water X dry chemical X foam X other     

Selection of extinguishing media should be based upon the size of the fire and the firefighting training/experience of the individual attempting to extinguish or control a fire. Use media appropriate for the surrounding fire.

This information is supplied in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the California Safe Drinking Water and Toxics Enforcement Act of 1986 (California Health & Safety Code 25249.6). Users are advised that they may have additional disclosure obligations under other federal, state, and local laws. Users are advised to ensure that this information is brought to the attention of the employees, agents, or contractors handling this product. Distributors of this product are advised to forward this document, or the information contained herein, to their purchaser. Raychem makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. Raychem's obligations shall be only as set forth in Raychem's standard terms and conditions of sale for this product and in no case will Raychem be liable for any incidental, indirect, or consequential damages arising out of the sale, resale, use or misuse of the product. Users of Raychem products should make their own evaluation to determine the suitability of each such product for the specific application and to establish safe handling and installation procedures.

Data Sheet Prepared By: Donna Seid, Corporate Toxicology

Date: June 1997

Data Sheet Approved By: Steve Zingheim, Wire and Cable Division

Date: June 1997



MSDS

M A T E R I A L   S A F E T Y   D A T A   S H E E T

SECTION I - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : EPOXY THINNER MIL-T-81772B  
IDENTIFICATION NUMBER: 817722-----  
PRODUCT USE/CLASS :

DATE PRINTED: 09/07/01

SUPPLIER:  
Randolph Products  
701 12th Street  
PO Box 830  
Carlstadt, NJ 07072

MANUFACTURER:  
Randolph Products  
701 12th Street  
PO Box 830  
Carlstadt, NJ 07072

EMERG TEL:Chem Tel 800 255-3924  
24 hrs

EMERG TEL:Chem Tel 800 255-3924  
24 hrs

PREPARER: JHR, PHONE: 201 438-3700, PREPARE DATE: 06/16/01

SECTION II - COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WT. PERCENT	OCCUPATIONAL EXPOSURE LIMITS					SKIN
		IS LESS THAN	TLV-TWA	TLV-STEL	PEL-TWA	PEL-CEILING		
METHYL ETHYL KETONE	78-93-3	50.0 %	200 PPM	300 PPM	200	NOT ESTAB	NO	
PROPYLENE GLYCOL MONOMETHYL ETHER	107-98-2	35.0 %	100 PPM	150 PPM	NOT ESTAB	NOT ESTAB	NO	
METHYL ISOBUTYL KETONE	108-10-1	20.0 %	50 PPM	75 PPM	100 PPM		NO	

(See Section 11 for abbreviation legend)

SECTION III - PHYSICAL DATA

BOILING RANGE : 172 - 257 F VAPOR DENSITY : Is heavier than air  
ODOR : TYPICAL SOLVENT LB/GAL : 6.984  
VAPOR PRESSURE : pH @ 0.0 % :  
APPEARANCE : COLORLESS LIQUID EVAPORATION RATE: Is slower than Ether  
SOLUBILITY IN H2O : NO  
VOLATILE BY WEIGHT: 100.0% VOLATILE BY VOL.: 100.0%  
VOCS, lbs/gal : 6.98 VOCS, grams/ltr : 837

(See Section XI for abbreviation legend)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 21 F  
FLAMMABILITY CLASSIFICATION:

LOWER EXPLOSIVE LIMIT: 1.4 %

OSHA - FLAMMABLE LIQUID - CLASS IB  
DOT - FLAMMABLE LIQUID OR SOLID

(Continued on Page 2)



SECTION IV - FIRE AND EXPLOSION HAZARD DATA
---

(SETAFLASH CLOSED CUP)

UPPER EXPLOSIVE LIMIT: 11.8 %

EXTINGUISHING MEDIA: FOAM DRY CHEMICAL CO2

UNUSUAL FIRE AND EXPLOSION HAZARDS: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, AND OPEN FLAME. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. WATER MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. REMOVE ALL NON-ESSENTIAL PERSONNEL FROM FIRE AREA. VAPOR IS HEAVIER THAN AIR AND CAN TRAVEL CONSIDERABLE DISTANCES TO A SOURCE OF IGNITION AND FLASHBACK.

SPECIAL FIREFIGHTING PROCEDURES: PROVIDE RESPIRATORY PROTECTION AGAINST FUMES GENERATED DURING BURNING. WATER STREAM WILL SPREAD FIRE. DO NOT USE WATER HOSE STREAM. FULL BUNKER GEAR IN FIRE AREA (HELMET WITH FACE SHIELD, BUNKER COAT, GLOVES, RUBBER BOOTS)

SECTION V - HEALTH HAZARD DATA
--------------------------------

EFFECTS OF OVEREXPOSURE - EYE CONTACT: PRIMARY IRRITATION.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: CHRONIC HEALTH EFFECTS ARE POSSIBLE FROM LONG TERM EXPOSURE TO THIS MATERIAL, INCLUDING DRYING, CRACKING AND IRRITATION OF THE SKIN. REACTS WITH SKIN PROTEIN AND MOISTURE AND CAN CAUSE RASH, SCALING OR BLISTERING.

EFFECTS OF OVEREXPOSURE - INHALATION: HIGH CONCENTRATIONS MAY CAUSE HEADACHES AND DIZZINESS, ARE ANESTHETIC, AND MAY HAVE OTHER CENTRAL NERVOUS SYSTEM EFFECTS, INCLUDING DEATH.

EFFECTS OF OVEREXPOSURE - INGESTION: HARMFUL IF SWALLOWED.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: No Information.

FIRST AID - EYE CONTACT: CONTACT LENS WEARERS SHOULD CONSULT PROVIDER BEFORE HANDLING - FLUSH WITH COPIOUS AMOUNTS OF WATER - CONSULT PHYSICIAN IMMEDIATELY IF THERE IS EYE CONTACT. FIRST AID MUST BE STARTED IMMEDIATELY, SINCE DELAY CAN RESULT IN SERIOUS INJURY FLUSH WITH COPIOUS AMOUNTS OF WATER. CALL A PHYSICIAN AS SOON AS POSSIBLE NO MATTER HOW SLIGHT THE INJURY APPEARS TO BE.

FIRST AID - SKIN CONTACT: WASH HANDS THOROUGHLY WITH SOAP AND WATER.

FIRST AID - INHALATION: INHALATION: REMOVE TO FRESH AIR, RESTORE BREATHING. CONSULT A PHYSICIAN. SKIN CONTACT: FLUSH WITH WATER. EYE CONTACT: FLUSH IMMEDIATELY WITH LARGE AMOUNTS OF WATER. CONSULT A PHYSICIAN.

FIRST AID - INGESTION: DO NOT INDUCE VOMITING. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

(Continued on Page 3)



**SECTION V - HEALTH HAZARD DATA**

PRIMARY ROUTE(S) OF ENTRY: INHALATION SKIN CONTACT SKIN ABSORPTION EYE CONTACT

**SECTION VI - REACTIVITY DATA**

HAZARDOUS DECOMPOSITION PRODUCTS: THERMAL DECOMPOSITION RELEASES CARBON MONOXIDE AND/OR CARBON DIOXIDE.

CONDITIONS TO AVOID: AVOID STRONG OXIDIZERS, ACIDS AND ALKALIES.

INCOMPATABILITY: NONE KNOWN.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

**SECTION VII - SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: AVOID BREATHING SOLVENT VAPOR. ENSURE ADEQUATE VENTILATION. AVOID SPARKS, FLAMES, AND ANYTHING WHICH COULD CAUSE FIRE. ELIMINATE SOURCE OF SPILL IF YOU CAN DO SO WITHOUT RISK BY CLOSING VALVE, PLUGGING HOLE, ETC.. APPLY ABSORBENT INERT MATERIAL (SAND, DUST, VERMICULITE) TO SPILL. CLEAN SPILL WITH BRISTLE BROOMS, NON-SPARKING TOOLS, CLEAN DRY RAGS. PROTECTIVE CLOTHING SHOULD BE WORN.

WASTE DISPOSAL METHOD: SOAK LIQUIDS WITH SAWDUST OR RAGS AND REMOVE. FLUSH WITH WATER IF POSSIBLE. AVOID SKIN CONTACT. DISPOSAL SHOULD BE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. DO NOT INCINERATE, CUT OR WELD EMPTY CONTAINERS. WHEN DISCARDED THIS MATERIAL IS AN HAZARDOUS WASTE. TRANSFER LIQUID TO CONTAINERS FOR RECOVERY OR DISPOSAL. EPA HAZARDOUS WASTE CODE F003 HAZARDOUS WASTE CHARACTERISTICS. IGNITABILITY.

**SECTION VIII - SAFE HANDLING AND USE INFORMATION**

RESPIRATORY PROTECTION: NIOSH/OSHA APPROVED RESPIRATOR TYPES SUITABLE FOR MATERIALS IN SECTION II RECOMMENDED. APPROVED CHEMICAL/MECHANICAL FILTERS RECOMMENDED WHEN VENTILATION IS RESTRICTED.

VENTILATION: SUFFICIENT VENTILATION, IN VOLUME AND PATTERN, SHOULD BE PROVIDED TO KEEP AIR CONTAMINATION BELOW CURRENT APPLICABLE OSHA PERMISSIBLE EXPOSURE LIMIT OR ACGHI'S TLV LIMIT. SOLVENT VAPORS SHOULD BE REMOVED FROM LOWER LEVELS OF WORK AREA AND IGNITION SOURCES SHOULD BE ELIMINATED.

SKIN PROTECTION: USE PROTECTIVE CREAMS WHERE SKIN CONTACT IS LIKELY. WEAR PROTECTIVE GLOVES AND GOGGLES.

(Continued on Page 4)



## SECTION VIII - SAFE HANDLING AND USE INFORMATION

EYE PROTECTION: CHEMICAL GOGGLES WITH SIDE SHIELDS OR FACE SHIELD RECOMMENDED.

OTHER PROTECTIVE EQUIPMENT: PRECAUTIONS MUST BE TAKEN SO THAT PERSONS DO NOT HAVE CONTACT WITH EYES OR SKIN. PROTECT AGAINST EXPOSURE TO BOTH VAPOR AND SPRAY MIST. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE.

HYGIENIC PRACTICES: USE NORMAL HYGIENE PRACTICES DURING AND AFTER HANDLING THIS MATERIAL.

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: PRE-EXISTING SENSITIVITY TO SOLVENTS CAN CAUSE A HEIGHTENED REACTION TO EXPOSURE TO THIS PRODUCT. DRUMS SHOULD BE GROUNDED WHEN BEING EMPTIED. THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH RANDOLPH PRODUCTS CO. OR NOT. CONFIRM IN ADVANCE OF USE THE ACCURACY AND SUITABILITY. DATA ACCUMULATED HEREIN ORIGINATES WITH OUR SUPPLIERS. DUE TO VARIATIONS IN RAW MATERIAL BATCHES THERE MAY BE TRACE ELEMENTS OF SUBSTANCES NOT LISTED WHICH WOULD NOT REQUIRE CHANGES TO THIS SHEET.

OTHER PRECAUTIONS: No Information.

## SECTION X - HMIS RATINGS

HMIS RATINGS - HEALTH: 2 FLAMMABILITY: 3 REACTIVITY: 0

## SECTION XI - OTHER REGULATIONS

## SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

----- CHEMICAL NAME -----	CAS NUMBER	WT/WT % IS LESS THAN
METHYL ETHYL KETONE	78-93-3	50.0 %
PROPYLENE GLYCOL MONOMETHYL ETHER	107-98-2	35.0 %
METHYL ISOBUTYL KETONE	108-10-1	20.0 %

TOXIC SUBSTANCES CONTROL ACT:

(Continued on Page 5)



## SECTION XI - OTHER REGULATIONS

## TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

----- CHEMICAL NAME -----	CAS NUMBER
No information is available.	

## U.S. STATE REGULATIONS: AS FOLLOWS -

## NEW JERSEY RIGHT-TO-KNOW:

The following materials are non-hazardous, but are among the top five components in this product:

----- CHEMICAL NAME -----	CAS NUMBER
No non-hazardous materials are among the top five ingredients.	

## PENNSYLVANIA RIGHT-TO-KNOW:

The following non-hazardous ingredients are present in the product at greater than 3%:

----- CHEMICAL NAME -----	CAS NUMBER
No non-hazardous ingredients are present at greater than 3%.	

## CALIFORNIA PROPOSITION 65:

WARNING: The chemical(s) noted below and contained in this product, are known to the state of California to cause cancer, birth defects or other reproductive harm:

----- CHEMICAL NAME -----	CAS NUMBER
No Proposition 65 chemicals exist in this product.	

PREVIOUS MSDS REVISION DATE: 06/21/99

LEGEND: N.A. - Not Applicable, N.E. - Not Established,  
N.D. - Not Determined

The information contained herein is to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable Federal, State, and Local laws and regulations.

<END OF MSDS>



EXXON USA A DIV OF EXXON -- 131030-00627 VARSOL 1 - SOLVENT  
MATERIAL SAFETY DATA SHEET  
NSN: 8030012878185  
Manufacturer's CAGE: 29700  
Part No. Indicator: B  
Part Number/Trade Name: 131030-00627 VARSOL 1

=====

General Information

=====

Item Name: SOLVENT  
Company's Name: EXXON CO USA, A DIV OF EXXON CORP.  
Company's Street: 800 BELL ST  
Company's P. O. Box: 2180  
Company's City: HOUSTON  
Company's State: TX  
Company's Country: US  
Company's Zip Code: 77252-2180  
Company's Emerg Ph #: 713-656-3424/800-424-9300 (CHEMTREC)  
Company's Info Ph #: 713-656-3424/3540  
Record No. For Safety Entry: 001  
Tot Safety Entries This Stk#: 002  
Status: FE  
Date MSDS Prepared: 12APR95  
Safety Data Review Date: 13JUN96  
Supply Item Manager: CX  
MSDS Preparer's Name: MARKETING TECHNICAL SER  
Preparer's Company: EXXON COMPANY, USA (713-656-5949)  
Preparer's St Or P. O. Box: ROOM 2345, POB 2180  
Preparer's City: HOUSTON  
Preparer's State: TX  
Preparer's Zip Code: 77252-2180  
MSDS Serial Number: BZLNB  
Specification Number: UNKNOWN  
Unit Of Issue: EA  
Unit Of Issue Container Qty: UNKNOWN  
Type Of Container: UNKNOWN  
Net Unit Weight: UNKNOWN

=====

Ingredients/Identity Information

=====

Proprietary: NO  
Ingredient: STODDARD SOLVENT  
Ingredient Sequence Number: 01  
Percent: 100  
NIOSH (RTECS) Number: WJ8925000  
CAS Number: 8052-41-3  
OSHA PEL: 500 PPM  
ACGIH TLV: 100 PPM; 9495  
Other Recommended Limit: NONE RECOMMENDED

-----  
Proprietary: NO  
Ingredient: C\*7-C\*10 SATURATED HYDROCARBON  
Ingredient Sequence Number: 02  
Percent: 83.0  
NIOSH (RTECS) Number: 1002492SH  
OSHA PEL: NOT ESTABLISHED  
ACGIH TLV: NOT ESTABLISHED  
Other Recommended Limit: NONE RECOMMENDED

-----  
Proprietary: NO  
Ingredient: 1,2,4-TRIMETHYLBENZENE (SARA 313)  
Ingredient Sequence Number: 03  
Percent: 4.0



NIOSH (RTECS) Number: DC3325000  
CAS Number: 95-63-6  
OSHA PEL: 25 PPM  
ACGIH TLV: 25 PPM; 9495  
Other Recommended Limit: NONE RECOMMENDED

-----  
Proprietary: NO  
Ingredient: C8+ AROMATICS  
Ingredient Sequence Number: 04  
Percent: 17.0  
NIOSH (RTECS) Number: 1009803CA  
OSHA PEL: NOT ESTABLISHED  
ACGIH TLV: NOT ESTABLISHED  
Other Recommended Limit: NONE RECOMMENDED  
=====

#### Physical/Chemical Characteristics

=====

Appearance And Odor: CLEAR WATER-WHITE LIQUID, MINERAL SPIRITS ODOR.  
Boiling Point: 315F, 157C  
Melting Point: <0F, <-18C  
Vapor Pressure (MM Hg/70 F): 1.6MM @20C  
Vapor Density (Air=1): 3.5  
Specific Gravity: 0.80  
Evaporation Rate And Ref: 0.1 (N-BUTYL ACETATE=1)  
Solubility In Water: NELGIGIBLE, 0.005%  
Percent Volatiles By Volume: 100  
Viscosity: 1.25CST @25C  
pH: NEUTRA  
Autoignition Temperature: 254C  
=====

#### Fire and Explosion Hazard Data

=====

Flash Point: 104F, 40C  
Flash Point Method: TCC  
Lower Explosive Limit: 2.1  
Upper Explosive Limit: 13.3  
Extinguishing Media: FOAM, H2O SPRAY (FOG), DRY CHEM, CO2, VAP LIQ TYP EXT  
AGENT. H2O MAY BE INEFFECTIVE. PLAN FIRE PROT/RESP STRATEGY THRU COMMUNIT  
Special Fire Fighting Proc: KEEP FIRE-EXPO CNTNRS COOL W/H2O. DISPERSE  
VAP/PROTECT MEN STOP LEAK, FLUSH SPILLS AWAY FRM EXPO W/H2O SPRAY. MIN BREATH  
GAS/VAP/FUMES/DECOMPO PROD. SUP-AIR BREATH  
Unusual Fire And Expl Hazrds: LIQ IS VOLATILE/GIVE OFF INVISIBLE VAP; MAY  
SETTLE IN LOW AREAS/TRAVEL SOME DISTANCE ALONG GROUND/SURFACE TO IGN  
SOURCES; MAY IGN/EXPLO.  
=====

#### Reactivity Data

=====

Stability: YES  
Cond To Avoid (Stability): KEEP PRODUCT AWAY FRM IGN SOURCES SUCH AS  
HEAT, SPARKS, PILOT LIGHTS, STATIC ELECTRICITY, OPN FLAME.  
Materials To Avoid: STRONG OXIDANTS SUCH AS LIQ CHLORINE, CONCEN OXY,  
SODIUM HYPOCHLORITE, CALCIUM HYPOCHLORITE, ETC-PRESENTS SER EXPLO HAZ.  
Hazardous Decomp Products: FUMES, SMOKE, CO, SULFUR OXIDES, ALDEHYDES, OTHER  
DECOMPO PROD IN CASE OF INCOMPLETE COMBUSTION.  
Hazardous Poly Occur: NO  
Conditions To Avoid (Poly): NOT APPLICABLE  
=====

#### Health Hazard Data

=====

LD50-LC50 Mixture: ORAL LD50 (RABBIT) >3.16G/KG OF BODY WT  
Route Of Entry - Inhalation: YES  
Route Of Entry - Skin: YES  
Route Of Entry - Ingestion: NO  
Health Haz Acute And Chronic: SKIN: REMOVE OILS, IRRIT, DERM. EYE: IRRIT.  
=====



INGEST:LOW ORDER OF ACUTE ORAL/DERM TOX.MINUTE AMTS ASPIRATED INTO LUNGS DURING INGEST/VOMIT CAUSE MILD-SEVERE PULM INJURY,POSSIBLY DEATH.  
Carcinogenicity - NTP: NO  
Carcinogenicity - IARC: NO  
Carcinogenicity - OSHA: NO  
Signs/Symptoms Of Overexp: HIG VAP CONCE(>1000PPM)IRRIT EYE,RESP TRACT. CAUSE HEAD,DIZZ,ANESTHESIA,DROWS,UNCONSC,OTHER CNS EFFECTS INCLUDING DEATH.  
Med Cond Aggravated By Exp: PETROL SOLVTS/PETO HYDROCARBONS-SKIN CONTACT MAY AGGRAVATE EXISTING DERMATITIS.  
Emergency/First Aid Proc: EYE:FLUSH W/CLEAR WATER FOR 15MINS/TIL IRRI SUBSIDES.IRRIT PERSISTS CALL PHYSICIAN. SKIN:REMOVE CONTAMIN CLOTH.WASH SKIN W/SOAP/WATER.IF INJECTED INTO/UNDER SKIN/INTO ANY PART OF BODY EVALUATE IMMED BY DR AS SURGICAL EMERG.EARLY SURGICAL TREAT W/IN 1ST FEW HRS MAY SIGNIFICANTLY ULTIMATE EXTENT OF INJURY. INHAL:REMOVE FRM EXPO.CALL PHYSICIAN IMMED.BREATH IRREG/STOP START RESUSCIT,ADMIN OXY. (SUPPL)

#### Precautions for Safe Handling and Use

Steps If Matl Released/Spill: SHUT OFF.ELIMINATE IGN SOURCES.KEEP PEOPLE AWAY.RECOVER FREE PORD.ADD SAND/EARTH/SUITABLE ABSORBENT.MIN BREATH VAP/ SKIN CONTACT.VENTI CONFINED SPACES.OPN WINDOWS/DOORS.KEEP OUT OF SEWERS/ WATERCOURSES W/DIKE/IMPOUND.CONFORM TO APPLICABLE GOVT REGS.  
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.  
Waste Disposal Method: DO NOT CLEAN EMPTY CNTNR-RESIDUE DIFF TO REMOVE; DRAIN COMPLETELY/PROPERLY BUNGED/RETURN TO DRM RECONDITIONER.ALL OTHER CNTNR DISPO IN ENVR SAFE MANNER IAW GOVT REGS.PROD OIL.REPORT TO NAT RESP CNTRN 800-424-8802 IF DISCHARGE/SPILL INTO/LEAD TO(SUPP)  
Precautions-Handling/Storing: KEEP CNTNR CLSD WHEN NOT IN USE.DO NOT STORE NEAR HEAT/SPARKS/FLAME/STRONG OXID.EFFECTIVELY GROUND PROD TRANS SYS IAW NFPA.USE APPROP EQMPT.NFPA-70.  
Other Precautions: EMPTY CNTNR RETAIN RESIDUE-DANGEROUS.DO NOT PRESSURIZE/ CUT/WELD/BRAZE/SOLDER/DRILL/GRIND/EXPO TO HEAT/FLAME/SPARKS/STATIC ELECTR/ IGN SOURCES-MAY EXPLO/INJURY/DEATH.REFER:ANSI Z49.1/OTHER GOVT REGS FOR CLEAN/REPAIR/WELD/CONTEMPLATE OPERATION

#### Control Measures

Respiratory Protection: NONE SPECIFIED BY MANUFACTURER.  
Ventilation: USE ONLY W/VENTI SUFFICTO PREVENT EXCEEDING RECOMMENDED EXPO LIMIT/BUILUP OF EXPLO CONCEN.NO SMOKE/FLAME USE/IGN SOURCE.  
Protective Gloves: CHEM-RESIST GLOVES.  
Eye Protection: SPLASH GOGG,FACE SHIELDS.  
Other Protective Equipment: CHEM-RESIST APRON/OTHER IMPERV CLOTH IF NEEDED.WATERLESS HANDCLEANERS FOLLOWED BY WASHING WELL W/SOAP/WATER.  
Work Hygienic Practices: MIN BREATH VAP/MIST.LAUNDER/DRYCLEAN CONTAMIN CLOTH/SHOES BEF REUSE.CLEAN WELL BEF MEALS/BREAKS/END @WORK PER.  
Suppl. Safety & Health Data: 1ST AID:INGEST:DO NOT INDUCE VOMIT.CALL PHYSICIAN IMMED. DISPO:SURFACE WATER(CAUSE SHEEN).

#### Transportation Data

Trans Data Review Date: 96165  
DOT PSN Code: ZZZ  
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION  
IMO PSN Code: ZZZ  
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION  
IATA PSN Code: ZZZ  
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION  
AFI PSN Code: ZZZ  
AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION  
Additional Trans Data: PER MSDS:TRANSP BY HIGHWAY/RAIL:BULK PKG(CAPACITY >119GAL)PETRO DISTILLATE,N.O.S.,COMBUST LIQ,UN1268,III.NON- BULK PKG(CAPACITY <=119GAL)NOT REG.TRANSP BY AIR/MARINE VESSEL:BULK/NON- BULK PKG,PETRO DISTILLATE,N.O.S.,3,UN1268,III.



## =====

## Disposal Data

## =====

## Label Data

=====

Label Required: YES  
Technical Review Date: 13JUN96  
Label Status: F  
Common Name: 131030-00627 VARSOL 1  
Signal Word: CAUTION!  
Acute Health Hazard-Slight: X  
Contact Hazard-Slight: X  
Fire Hazard-None: X  
Reactivity Hazard-None: X  
LOW ORDER OF ACUTE ORAL/DERM TOX.MINUTE AMTS ASPIRATED INTO LUNGS DURING  
INGEST/VOMIT CAUSE MILD-SEVERE PULM INJURY,POSSIBLY DEATH.1STADI:EYE:FLUSH  
W/CLEAR WATER FOR 15MINS/TIL IRRI SUBSIDES.IRRIT PERSISTS CALL PHYSICIAN.  
SKIN:REMOVE CONTAMIN CLOTH.WASH SKIN W/SOAP/WATER.IF INJECTED INTO/UNDER  
SKIN/INTO ANY PART OF BODY EVALUATE IMMED BY DR AS SURGICAL EMERG.EARLY  
SURGICAL TREAT W/IN 1ST FEW HRS MAY SIGNIFICANTLY ULTIMATE EXTENT OF  
INJURY. INHAL:REMOVE FRM EXPO.CALL PHYSICIAN IMMED.BREATH IRREG/STOP START  
RESUSCIT,ADMIN OXY.INGEST:DO NOT INDUCE VOMIT.CALL PHYSICIAN IMMED.  
Protect Eye: Y  
Protect Skin: Y  
Protect Respiratory: Y  
Label Name: EXXON CO USA, A DIV OF EXXON CORP.  
Label Street: 800 BELL ST  
Label P.O. Box: 2180  
Label City: HOUSTON  
Label State: TX  
Label Zip Code: 77252-2180  
Label Country: US  
Label Emergency Number: 713-656-3424/800-424-9300(CHEMTREC)



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[ChemSail.Com](#)

Enter a chemical name, CAS Number, molecular formula, or molecular weight

Or choose: [Substructure Query with Plug-In](#) or [Structure Query with Java](#)**maximumservice****Naphtha [8030-30-6]****Synonyms:** Petroleum Benzine; Naphtha, coal tar; rubber solvent; VM&P naphtha; Benzine Petroleum Naphtha;

BUY AT CHEMACK.COM

[Add Compound](#)[Add or Change Property](#)[Add Link](#)

ACX Number X1003254-1

Melting Point (°C)

Boiling Point (°C) 110 - 190

Refractive Index

Evaporation Rate

Flash Point (°C)

DOT Number UN 1255; UN 1256; UN 2553 Flammable Liquid

Comments Reddish-brown, mobile liquid with an aromatic odor

CAS RN 8030-30-6

Density 0.76

Vapor Density

Vapor Pressure

Water Solubility

EPA Code

RTECS GF8635000

**More information about the chemical is available in these categories:**[Health](#)[MSDS](#)[Physical Properties](#)[Regulations](#)**Health**[ATSDR Internet HazDat Site Contaminant Query](#)[Information about this particular compound](#)[Information about this particular compound](#)[Hazardous Chemicals Database at the University of Akron](#)[Information about this particular compound](#)[8\(e\) TRIAGE Chemical Studies Database](#)[Idaho Toxic and Hazardous Substances](#)[North American Emergency Response Guidebook 1996 \(NAERG96\)](#)



Information about this particular compound

## MSDS

New Jersey Right to Know Hazardous Substance Fact Sheets

Information about this particular compound

## Physical Properties

Required HLB Numbers for Emulsification of Oils and Waxes

DuPont TYVEK® Protective Apparel Information Service

Information about this particular compound

Pollution Prevention Progress Measurement Method (3P2M) Hazard Ranking

Genium's Chemical Container Label Database

Information about this particular compound

NFPA Chemical Hazard Labels

Information about this particular compound

## Regulations

NASA Department of Environmental Services List Of Lists of Regulated Chemicals

Information about this particular compound

California EPA List of Lists

OSHA Chemical Sampling and Methods

Information about this particular compound

OSHA Limits for Air Contaminants

Guide to NIOSH/OSHA Air Sampling Methods

Information about this particular compound

Information about this particular compound

Information about this particular compound

Information about this particular compound

Enter a chemical name, CAS Number, molecular formula, or molecular weight

Substructure Query with Plug-In or Substructure Query with Java

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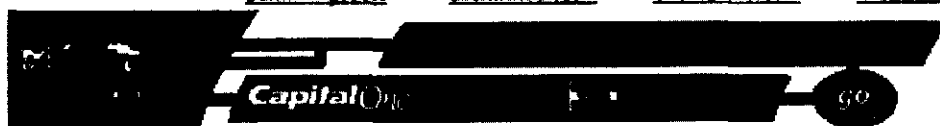
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# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Bond 200 Adhesive

March 30, 2001

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

919-365-3800

CHEMTREC 1-800-424-9300 (U.S.)  
703-527-3887 (Outside U.S.)

PIASECKI AIRCRAFT CORP. MSDS # MGM007L

RECEIVED & INSPECTED	
P O 65652	
BY <u>J. O'Shea</u>	DATE <u>2-11-02</u>

NOTE: CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

NOTE: This material is purchased from a number of suppliers and distributed by Measurements Group, Inc. To ensure that you have the appropriate information, cross-reference the following data with the manufacturer's label on the product you purchased.

CAS NUMBER	CHEMICAL IDENTITY	%
Ethyl Cyanoacrylate Adhesive EC-100E (Chemence, Inc.)		
7085-85-0	Ethyl Cyanoacrylate	95-100
9011-14-7	Poly Methyl Methacrylate	3-5
123-31-9	Hydroquinone	0.1-0.5
Cyberbond APOLLO 2010 (Cyberbond, L.L.C.)		
7085-85-0	Ethyl 2 Cyanoacrylate	80-90
9011-14-7	Poly Methyl Methacrylate	10-20
Accrabond #419 S-2 (Accrabond, Inc.)		
7085-85-0	Ethyl-2-Cyanoacrylate	90



**ADHESIVE ON THE EYEBALL:** Cyanoacrylate introduced into the eyes will attach itself to the eye protein and will disassociate from it over an indeterminable period, generally covering several hours. This will cause periods of weeping until clearance is achieved. During the period of contamination, double vision may be experienced together with a lachrymatory effect, and it is important to understand the cause and realize that disassociation will normally occur within a matter of hours, even with gross contamination.

**MOUTH:** If lips are accidentally stuck together, apply lots of warm water to the lips and encourage maximum wetting and pressure from saliva inside the mouth. Peel or roll lips apart. Do not try to pull the lips with direct opposing action.

It is almost impossible to swallow cyanoacrylate. The adhesive solidifies and adheres in the mouth. Saliva will lift the adhesive in 1/2 to 2 days. In case a lump forms in the mouth, position the patient to prevent ingestion of the lump when it detaches.

**INGESTION:** Saliva should lift the adhesive in 12 to 48 hours. Do not force removal. Do not swallow the adhesive when it loosens.

**BURNS:** Cyanoacrylates give off heat on solidification. In rare cases a large drop will increase in temperature enough to cause a burn.

Burns should be treated normally after the lump of cyanoacrylate is released from the tissue as described above.

**SURGERY:** It should never be necessary to use such a drastic method to separate accidentally bonded skin.

**INHALATION:** Move to fresh air. If symptoms persist, call a physician.

#### SECTION 5: FIRE AND EXPLOSION HAZARD DATA

**Flash Point (Method Used):** 150°F - 200°F Tag Closed Cup

**Flammable limits:** LEL: Not determined UEL: Not determined

**Extinguishing Media:** Carbon dioxide, foam, dry chemical.

**Special Firefighting Procedures:** Firefighters should wear proper protective clothing and self-contained breathing apparatus.

**Unusual Fire and Explosion Hazards:** None known.

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

**Steps to be taken if material is released or spilled:** Flood with water to polymerize cyanoacrylate adhesive and to control product vapors. Soak up with an inert absorbent or scrape up cured product.



**SECTION 10: STABILITY AND REACTIVITY DATA**

**Stability:** Stable.

**Conditions to Avoid:** High temperatures.

**Incompatibility (Materials to Avoid):** Water, alcohols, amines, alkalies, peroxides, cotton and wool.

**Hazardous Decomposition or By-products:** None known.

**Hazardous Polymerization:** Will not occur.

**SECTION 11: TOXICOLOGICAL INFORMATION****Ethyl Cyanoacrylate**

OSHA PEL:	Not known
ACGIH TLV:	2 ppm TWA
ACGIH STEL:	4 ppm TWA
OTHER:	None

**Poly Methyl Methacrylate**

OSHA PEL:	None
ACGIH TLV:	None
OTHER:	None

**Hydroquinone**

OSHA PEL:	2 mg/M <sup>3</sup> TWA
ACGIH TLV:	2 mg/M <sup>3</sup> TWA
OTHER:	4 mg/m <sup>3</sup> STEL

**SECTION 12: DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:** Dispose of in accordance with local, state, and federal regulations.



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Bond 200 Catalyst C

December 8, 2000

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS # MGM059D**

919-365-3800

CHEMTREC 1-800-424-9300 (U.S.)  
703-527-3887 (Outside U.S.)

NOTE: CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
67-63-0	2-Propanol	98.0
120-07-0	n-Phenyldiethanolamine	2.0

## SECTION 3: HEALTH HAZARD DATA

**Routes of Entry:**

**Inhalation:** YES    **Skin:** YES    **Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** Skin contact over-exposure may cause dermatitis.

<b>Carcinogenicity:</b>	NTP:	Not listed
	IARC Monographs:	Not listed
	OSHA Regulated:	Not listed



**SECTION 7: EXPOSURE CONTROLS – PERSONAL PROTECTION**

**Respiratory Protection:** Respiratory protection required if airborne concentration exceeds TLV. At concentrations up to 1000 ppm, a chemical cartridge respirator with organic vapor cartridge is recommended. Above this level, a self-contained breathing apparatus is recommended.

**Ventilation:** Use general or local exhaust ventilation to meet TLV requirements.

**Local Exhaust:** Keep below TLV

**Mechanical:** Keep below TLV

**Special:** N/A

**Other:** N/A

**Protective Gloves:** Butyl rubber gloves are recommended.

**Eye Protection:** Safety goggles are recommended.

**Other Protective Clothing or Equipment:** Protective apron is recommended.

**Work / Hygienic Practices:** Wash thoroughly after using.

**SECTION 8: HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:** Keep container tightly closed. Store in a cool, dry, well-ventilated, flammable liquid storage area.

**Other Precautions:** Bond and ground containers when transferring liquid.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Boiling Point:</b>	181°F (83°C)
<b>Vapor Pressure (mmHg):</b>	33 @ 68°F (20°C)
<b>Vapor Density (Air = 1):</b>	2.1
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	0.78
<b>Melting Point:</b>	-128°F (-89°C)
<b>Evaporation Rate (BuAc = 1):</b>	2.83
<b>Volatile Organic Compounds:</b>	98%
<b>Solubility in Water:</b>	98%

**Appearance and Odor:** Blue liquid; alcohol odor.



**SECTION 13: TRANSPORTATION INFORMATION**

SHIPPING NAME	CLASS	PACKING GROUP	UN NUMBER
Isopropanol (Isopropyl Alcohol) Flammable Liquid	3	II	1219

**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
67-63-0	2-Propanol	98.0

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

**SECTION 15: OTHER INFORMATION**

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g)(2)(c)(1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Measurements Group, Inc. specifically disclaims any and all form of liability and/or responsibility for the application of this product.



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Bond Curing Agent - Type 10

July 31, 2000

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS # MGM002H**

919-365-3800

CHEMTREC 1-800-424-9300 (U.S.)  
703-527-3887 (Outside U.S.)

NOTE: CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
112-24-3	Triethylenetetramine	98 - 100

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

**Inhalation:** YES   **Skin:** YES   **Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** None known.

<b>Carcinogenicity:</b>	NTP:	Not listed
	IARC Monographs:	Not listed
	OSHA Regulated:	Not listed

### Signs and Symptoms of Exposure:

**INHALATION:** May cause respiratory sensitization in susceptible individuals. Excessive exposure may cause irritation to upper respiratory tract.

**EYE CONTACT:** May cause pain. May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness.



**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**Steps to be taken if material is released or spilled:** Soak up with absorbent material. Residual resin may be removed using steam or hot soapy water.

**SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION**

**Respiratory Protection:** Adequate ventilation to keep below TLV.

**Ventilation:**

**Local Exhaust:** Keep below TLV

**Mechanical:** Keep below TLV

**Special:** N/A

**Other:** N/A

**Protective Gloves:** Neoprene / polyethylene gloves recommended.

**Eye Protection:** Chemical safety glasses recommended.

**Other Protective Clothing or Equipment:** Neoprene / polyethylene apron, safety shower and eyewash station.

**Work / Hygienic Practices:** Wash thoroughly with soap and water after handling.

**SECTION 8: HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:** Store below 80°F (27°C) in a dry place. Avoid prolonged breathing of vapors and skin or eye contact.

**Other Precautions:** Keep containers tightly capped.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Boiling Point:</b>	>482°F (250°C)
<b>Vapor Pressure (mmHg):</b>	<1 mmHg @ 20°C
<b>Vapor Density (Air = 1):</b>	5.04
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	0.973 - 0.981
<b>Melting Point:</b>	N/A
<b>Evaporation Rate (BuAc = 1):</b>	N/A
<b>Volatile Organic Compounds:</b>	None
<b>Solubility in Water:</b>	Mixes completely

**Appearance and Odor:** Light, straw colored liquid; amine odor.



**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

<b>CAS NUMBER</b>	<b>CHEMICAL NAME</b>	<b>% BY WEIGHT</b>
NONE		

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

**SECTION 15: OTHER INFORMATION**

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g)(2)(c)(1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Measurements Group, Inc. specifically disclaims any and all form of liability and/or responsibility for the application of this product.



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Bond AE Resin

March 9, 2000

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS # MGM014F**

919-365-3800

CHEMTREC 1-800-424-9300 (U.S.)  
703-527-3887 (Outside U.S.)

**NOTE:** CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
1675-54-3 & 25085-99-8	Reaction products of Epichlorohydrin and Bisphenol-A (Epoxy Resin)	93.0
122-60-1	Phenyl Glycidyl Ether	4.0
108-46-3	m-Dihydroxybenzene	3.0
106-89-8	Epichlorohydrin*	<50 ppm

\*NOTE: This material can be present as a residual from Phenyl Glycidyl Ether and Epoxy Resin manufacturing. Further studies may establish a carcinogenic effect of this material on the human.

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

**Inhalation:** YES   **Skin:** YES   **Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** May cause irritation. Long-term skin exposure may cause burns.



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Line 361A-20R Solder

April 6, 1998

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS #** MGM039E

919-365-3800

CHEMTREC Telephone: 800-424-9300

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
7440-31-5	Tin	63.00
7439-92-1	Lead	36.65
7440-36-0	Antimony	0.35
8050-09-7	Rosin	<3.0

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

**Inhalation:** YES

**Skin:** YES

**Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** Repeated inhalation or ingestion of lead can result in systemic poisoning.

### Carcinogenicity:

NTP: Not listed  
IARC Monographs: Not listed  
OSHA Regulated: Not listed



**INGESTION:** Give large amounts of water or milk. Do NOT induce vomiting unless directed to do so by a physician. Transport to a medical facility.

**NOTE TO PHYSICIAN:** No specific antidote. Provide supportive care. Treatment should be based on the judgement of the physician in response to reactions of the patient.

#### SECTION 5: FIRE AND EXPLOSION HAZARD DATA

**Flash Point (Method Used):** 200°F (93°C) PMCC

**Flammable limits:** LEL: Unknown UEL: Unknown

**Extinguishing Media:** Carbon dioxide, dry chemical, foam.

**Special Firefighting Procedures:** In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

**Unusual Fire and Explosion Hazards:** Use water spray to cool fire exposed containers and fire affected area until fire is out and danger of re-ignition is passed. Sealed containers may rupture when heated.

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

**Steps to be taken if material is released or spilled:** Soak up in absorbent material such as sand and collect in suitable containers. Residual resin may be removed using steam or hot soapy water. Solvents are not recommended for clean up. Keep spark producing equipment away. For large spills, evacuate upwind of spills and contain with dike.

#### SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION

**Respiratory Protection:** If exposure exceeds occupational exposure limits, use a NIOSH-approved respirator. A system of local and/or general exhaust is recommended to keep employee exposures below the airborne exposure limit.

**Ventilation:**

<b>Local Exhaust:</b>	Local exhaust ventilation is generally preferred because it can control the emission at the source.
<b>Mechanical:</b>	Keep below TLV.
<b>Special:</b>	N/A
<b>Other:</b>	N/A

**Protective Gloves:** Neoprene or polyethylene gloves recommended.

**Eye Protection:** Chemical safety glasses recommended.



8.

DISPOSAL

**SPILLS AND LEAKS:** Less than 1 Quart - Wipe up, following guidelines above in "Safe Handling Procedure"

One quart or more - **EVACUATE AREA.** Ensure that clean up crew wears all personal safety wear as presented in "Safe Handling Procedure". The nose is NOT a reliable gauge of air contamination.

**WASTE DISPOSAL:** Dispose of as EPA hazardous waste #F002.  
May be sent to solvent reclaimer. Ensure that aerosol cans are empty and depressurized before discarding, unless a waste treatment facility is approved to accept them as is.

9.

PHYSICAL PROPERTIES

<b>BOILING POINT:</b>	162°F	<b>VAPOR PRESSURE:</b>	230 mm at 100°F
<b>PERCENT VOLATILE:</b>	100%	<b>VAPOR DENSITY:</b>	4
<b>DENSITY:</b>	1.3	<b>EVAPORATION RATE:</b>	3 times faster than ethyl alcohol
<b>WATER SOLUBILITY:</b>	Negligible	<b>APPEARANCE:</b>	Clear, colorless, mobile liquid
<b>pH:</b>	Neutral		
<b>WARNING PROPERTIES:</b> Odor can be detected at 100 ppm, but is not strong enough to cause discomfort at 1000 ppm.			

10.

DOT SHIPPING

**SHIPPING NAME:** For Bulk - Methyl Chloroform  
For Aerosol - Compressed Gas, N.O.S.

**MARKING:** For Bulk - None  
For Aerosol - Nonflammable Gas

**HAZARD CLASS:** For Bulk - ORM-A  
For Aerosol - Nonflammable Gas

**IDENTIFICATION:** For Bulk - UN2831  
For Aerosol - UN1956

11.

CERTIFIED

SKC-NF is composed entirely of materials listed in the TOSCA Inventory of Chemical Substances.

**DATE:** May 26, 1989

Supersedes MSDS dated December 2, 1988

**SIGNED:**

  
Bruce C. Graham, Chief Chemist  
MAGNAFLUX Corporation

**12. SPECIAL NOTE:** SKC-NF should not be used in a vapor degreaser.



**CONAFLEX CORPORATION MATERIAL SAFETY DATA SHEET**

**PRODUCT: BRINE CLEANER/DEGREASER**  
**(Formerly REG-NT/20-15)**

35  
No. 307

**IDENTIFICATION**

**ADDRESS:** 7300 West Lawrence Avenue, Chicago, Illinois 60656  
**TELEPHONE:** (312) 867-8000  
**PACKAGES:** 1 gallon can, 5 gallon pail, 30 and 55 gallon drums, 12 oz aerosol  
**CHEMICAL FAMILY:** Chlorinated Alkane  
**HMIS RATING:** Health 2, flammability 0, Reactivity 1

**HAZARDOUS INGREDIENTS**

1,1,1-Trichloroethane (Methyl chloroform), CAS #71-55-6, OSHA PEL: 350 ppm, Conc. 98% Bulk, 95% Aero  
Carbon dioxide (aerosol only), CAS #124-38-9, OSHA PEL: 5000 ppm, Conc. 5%  
Methylal, CAS #109-87-5, OSHA PEL 1000 ppm, about 1%  
2-Methyl, 2-propanol, CAS #75-65-0, OSHA PEL 100 ppm, about 1%  
1,1,1 - Trichloroethane is subject to the reporting requirements of Section 313  
of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 3

Contains no other ingredient suspected of being hazardous according to information sources given in  
29 CFR 1910.1200, OSHA Hazard Communication Rule.

**HEALTH HAZARD**

**THRESHOLD LIMIT VALUE:** 350 ppm

**ROUTES OF ENTRY, EFFECTS OF OVEREXPOSURE**

**Inhalation:** Dizziness, drowsiness, nausea. Unconsciousness at high exposure  
**Skin Contact:** Irritates by dissolving skin oils. Not absorbed through skin in  
amounts  
**Eye Contact:** Irritating due to strong solvent action  
**Ingestion:** Low single dose toxicity in test animals

**CARCINOGENICITY:** Contains no known carcinogens listed with OSHA, the IARC (International Agency  
for Research on Cancer Monographs or the NTP (National Toxicology Program)  
Annual Report on Carcinogens.

**MEDICAL CONDITIONS KNOWN TO BE AGGRAVATED BY EXPOSURE TO PRODUCT:** None

**FIRST AID**

**INHALATION:** Remove to fresh air. If not breathing, call emergency vehicle immediately.  
Give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen.  
**SKIN CONTACT:** Wash off in flowing water or shower. Remove contaminated clothes and wash  
before re-use. Use soothing lotion.  
**EYE CONTACT:** Lift upper eyelid, depress lower eyelid, and flush eye with a steady, gentle  
flow of water. Roll eyeball in all directions while flushing.  
**INGESTION:** Do not induce vomiting; if vomit is inhaled, it may cause asphyxiation. Contact  
physician immediately.

**IMPORTANT:**

**POISON CONTROL CENTER NUMBER**

In all severe cases, contact physician immediately. Local telephone operators  
are able to furnish number of Regional Poison Control Center to assist  
physician.



**FIRE HAZARD**

**PRIMARY HAZARD:** Can be a major contributing factor to a fire in progress, see stability below.

**SPECIAL FIRE FIGHTING PROCEDURE:** Keep containers cool with water spray.

**FLASH POINT:** None

**FLAMMABLE LIMITS IN AIR:** 10 - 15%, using intense ignition sources.

**EXTINGUISHING MEDIA:** None

**UNUSUAL FIRE HAZARDS:** Aerosol cans may burst at temperatures over 130°F. Vapors partially decompose to toxic gases when exposed to flame, arcs, or red hot surfaces.

**REACTIVITY HAZARDS**

**STABILITY:** Partially decomposes in flame, arcs, near red hot surfaces.

**INCOMPATIBILITY:** Powdered zinc and aluminum

**HAZARDOUS DECOMPOSITION PRODUCTS:** Phosgene, hydrochloric acid. Phosgene CAS 875-44-5 is extremely toxic, TLV 0.1 ppm and cannot be reliably detected by odor. Hydrochloric acid CAS 87647-01-0 is almost as toxic, TLV 5 ppm, and is detectable and even irritating at this concentration.

**SAFE HANDLING PROCEDURES**

**GENERAL:** Do not breathe vapors. Exposures above the TLV can result in clumsiness and poor judgment, with resulting danger to the victim and those around him. Much like ingesting too much alcohol. If victim is unconscious, death is possible, due to either suffocation (lack of oxygen), or cardiac arrest. For avoidance see next two sections.

Avoid frequent or prolonged exposure to skin as the solvent can irritate skin. Do not use around flame, arcs, red hot surfaces or lighted smoking materials, so as to avoid exposure to phosgene and hydrochloric acid.

Do not heat aerosol cans above 130°F to eliminate the possibility of their bursting and releasing unwanted vapors.

Store away from heat sources to minimize the danger from exposure to fires.

**PERSONAL PROTECTIVE EQUIPMENT:**

In poorly ventilated areas such as small rooms with no windows, or in sumps or other low areas (SKC-NF vapors are dense and sink to low spots) the user should wear a respirator with chemical cartridge.

In confined, unventilated spaces, such as the inside of tanks or small compartments, the inspector should wear a full mask with separate air supply.

If hand exposure to SKC-NF is unavoidable, wear nitrile rubber gloves, to avoid skin contact.

Wear full goggles if the application of SKC-NF includes splashing or the possibility of spraying into the eyes. Be sure the goggles are clean and not apt to degrade the inspection procedure.

**CONTROLS:** SKC-NF vapors cannot be allowed to collect. It is preferred to use SKC-NF either in a spray booth or next to an exhaust vent. Remember that the vapors tend to settle to the floor.

General ventilation must be sufficient to keep the concentration below 350 ppm. Almost all of the SKC-NF that is used will evaporate into the surrounding air. Base ventilation rate on consumption.



## **Attention Transporters**

This product is being shipped as a "Chemical Kit".

Chemical kit, as defined by IATA, "are boxes, cases, etc., containing small amounts of various dangerous goods used for analytical or other purposes."



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: CSM-100 Degreaser

July 31, 1996

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

MSDS # MGM058C

919-365-3800

CHEMTREC Telephone: 800-424-9300

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
1717-00-6	1,1-Dichloro-1-fluoroethane	96.5 - 99.0
67-56-1	Methanol	1.0 - 3.5
124-38-9	Carbon Dioxide (As propellant only)	3.0

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

Inhalation: YES

Skin: YES

Ingestion: Accidental

**Health Hazards (Acute and Chronic):** Inhalation or ingestion may cause intoxication or asphyxiation. Skin contact can cause defatting. Persons with pre-existing respiratory or heart problems may have the condition aggravated.

### Carcinogenicity:

NTP: Not listed  
IARC Monographs: Not listed  
OSHA Regulated: Not listed



**SECTION 5: FIRE AND EXPLOSION HAZARD DATA**

**Flash Point (Method Used):** None

**Flammable limits:** LEL: 6.0 UEL: 20.3

**Extinguishing Media:** Dry chemical, carbon dioxide, water spray, or alcohol foam.

**Special Firefighting Procedures:** Wear self-contained breathing apparatus and protective clothing when fighting fires involving chemicals. Cool fire exposed aerosol containers with water spray.

**Unusual Fire and Explosion Hazards:** Concentrated vapors in confined or poorly ventilated areas are ignitable by high intensity heat sources or open flames. High temperatures can cause aerosols to fail violently.

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**Steps to be taken if material is released or spilled:** Remove open flames, high-intensity heat sources. Wearing protective respiratory equipment and clothing, take up spill on an inert absorbent material and transfer to approved waste containers. Do not flush spills or residue into sewers or surface water.

**SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION**

**Respiratory Protection:** None required with adequate ventilation. If any TLV is exceeded, wear a NIOSH approved self-contained positive pressure respirator where air can be displaced by vapors and in emergency situations.

**Ventilation:**

<b>Local Exhaust:</b>	Keep below TLV
<b>Mechanical:</b>	Keep below TLV
<b>Special:</b>	N/A
<b>Other:</b>	N/A

**Protective Gloves:** Polyvinyl alcohol or neoprene.

**Eye Protection:** Chemical safety goggles.

**Other Protective Clothing or Equipment:** Wear an impervious apron or other protective clothing as needed to prevent unnecessary skin contact with the liquid or its sprays during use.



**SECTION 11: TOXICOLOGICAL INFORMATION****1,1-Dichloro-1-fluoroethane**

OSHA PEL: N/E  
ACGIH TLV: N/E  
OTHER: 500 ppm TWA (American Industrial Hygiene Association)

**Methanol**

OSHA PEL: 200 ppm  
ACGIH TLV: 260 mg/m<sup>3</sup>  
OTHER: 250 STEL

**Carbon Dioxide**

OSHA PEL: 10000 ppm  
ACGIH TLV: 18000 mg/m<sup>3</sup>  
OTHER: 30000 STEL

**SECTION 12: DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:** Dispose of in accordance with local, state and federal environmental regulations. Waste may be reclaimed or incinerated by federally permitted facilities.

**SECTION 13: TRANSPORTATION INFORMATION**

SHIPPING NAME	CLASS	UN NUMBER
Aerosols, Non-Flammable, N.O.S.	2.2	1950

**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
67-56-1	Methyl Alcohol (Methanol)	1.0 - 3.5



**SECTION 11: TOXICOLOGICAL INFORMATION**

Reaction products of Epichlorohydrin and Bisphenol-A  
(Epoxy Resin)

OSHA PEL:	Not known
ACGIH TLV:	Not known
OTHER:	LD <sub>50</sub> ORAL (RAT) >5000 mg/kg LD <sub>50</sub> SKIN (RABBIT) 20,000 mg/kg

m-Dihydroxybenzene

OSHA PEL:	10 ppm (TWA)
ACGIH TLV:	10 ppm (TWA)
OTHER:	20 ppm (STEL)

Phenyl Glycidyl Ether

OSHA PEL:	1 ppm (TWA)
ACGIH TLV:	1 ppm (TWA)
OTHER:	LD <sub>50</sub> ORAL (RAT) 3.85 g/kg LD <sub>50</sub> ORAL (MOUSE) 1.40 g/kg LD <sub>50</sub> SKIN (RAT) 2.16 g/kg LD <sub>50</sub> SKIN (MOUSE) 2.99 g/kg LC <sub>50</sub> INH (RAT) >100 ppm (8 HR) LC <sub>50</sub> INH (MOUSE) >100 ppm (4 HR)

Epichlorohydrin

OSHA PEL:	2 ppm (TWA)
ACGIH TLV:	2 ppm (TWA)

**SECTION 12: DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:** Any disposal practice must be in compliance with all federal, state, and local laws and regulations.



**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**Steps to be taken if material is released or spilled:** Melted solder will solidify on cooling and can be scraped up. Use caution to avoid breathing fumes if a gas torch is used to cut up large pieces.

**SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION**

**Respiratory Protection:** Usually not required. When ventilation is not sufficient to remove fumes from the breathing zone, a cartridge type respirator should be worn.

**Ventilation:**

**Local Exhaust:** Keep below TLV  
**Mechanical:** Keep below TLV  
**Special:** N/A  
**Other:** N/A

**Protective Gloves:** Not usually required.

**Eye Protection:** When soldering, use goggles or face shield.

**Other Protective Clothing or Equipment:** None

**Work / Hygienic Practices:** Wash hands thoroughly after handling solder containing lead and before eating, drinking or smoking.

**SECTION 8: HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:** Store away from sources of sulfur. Wash hands after handling solder containing lead. Avoid breathing fumes during soldering. Do not place flux cored solder into a hot solder pot since flux may ignite. Use of strong acid fluxes may result in liberation of toxic lead chloride fumes.

**Other Precautions:** None known.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**Boiling Point:** N/A  
**Vapor Pressure (mmHg):** N/A  
**Vapor Density (Air = 1):** N/A  
**Specific Gravity (H<sub>2</sub>O = 1):** >1  
**Melting Point:** N/A  
**Evaporation Rate (BuAc = 1):** N/A  
**Volatile Organic Compounds:** N/A  
**Solubility in Water:** Insoluble

**Appearance and Odor:** Silver-gray metal in wire form.



**SECTION 13: TRANSPORTATION INFORMATION**

SHIPPING NAME	CLASS	UN NUMBER
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Not required -- Shipped as non-hazardous article.

**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
7439-92-1	Lead	36.65
7440-36-0	Antimony	0.35

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

**SECTION 15: OTHER INFORMATION**

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g) (2) (c) (1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Measurements Group, Inc. specifically disclaims any and all form of liability and/or responsibility for the application of this product.

**PREPARED BY:** R. L. Fridley

**DATE:** April 6, 1998



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Line RSK-1 Rosin Solvent

August 2, 1995

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS #** MGM044D

919-365-3800

**CHEMTREC Telephone:** 800-424-9300

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
67-63-0	Isopropyl Alcohol	50.0
108-88-3	Toluene	50.0

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

**Inhalation:** YES

**Skin:** YES

**Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** Chronic effects may include kidney and/or liver damage.

### Carcinogenicity:

NTP: Not listed

IARC Monographs: Not listed

OSHA Regulated: Not listed

### Signs and Symptoms of Exposure:

**INHALATION:** Inhalation of vapors may cause headache, nausea, vomiting, dizziness, drowsiness, irritation of respiratory tract, and loss of consciousness.

**EYE CONTACT:** May result in temporary corneal damage.

**SKIN CONTACT:** Prolonged skin contact may result in dermatitis.

**INGESTION:** May cause nausea, vomiting, headache, dizziness, gastrointestinal irritation.



**SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION**

**Respiratory Protection:** Respiratory protection is required if airborne concentration exceeds TLV. At concentrations up to 1000 ppm, a chemical cartridge respirator with organic vapor cartridge is recommended. Above this level, a self-contained breathing apparatus is recommended.

**Ventilation:** Use general or local exhaust ventilation to meet TLV requirements.

**Local Exhaust:** Keep below TLV

**Mechanical:** Keep below TLV

**Special:** N/A

**Other:** N/A

**Protective Gloves:** Polyethylene or neoprene gloves are recommended.

**Eye Protection:** Safety goggles and faceshield are recommended.

**Other Protective Clothing or Equipment:** Neoprene apron is recommended.

**Work / Hygienic Practices:** Wash thoroughly after use.

**SECTION 8: HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:** Keep containers tightly closed. Store in cool, dry, well-ventilated, flammable liquid storage area.

**Other Precautions:** Bond and ground containers when transferring liquid.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Boiling Point:</b>	180°F (82°C)
<b>Vapor Pressure (mmHg):</b>	36 @ 80°F (30°C)
<b>Vapor Density (Air = 1):</b>	3.0
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	0.8
<b>Melting Point:</b>	N/A
<b>Evaporation Rate (BuAc = 1):</b>	2.8
<b>Volatile Organic Compounds:</b>	825 g/liter
<b>Solubility in Water:</b>	Partial

**Appearance and Odor:** Colorless liquid; benzene-like odor.



**SECTION 13: TRANSPORTATION INFORMATION**

SHIPPING NAME	CLASS	UN NUMBER
Flammable Liquids, N.O.S. (Toluene / Isopropanol)	3	1993

**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
67-63-0	Isopropyl Alcohol	50.0
108-88-3	Toluene	50.0

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

**SECTION 15: OTHER INFORMATION**

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g) (2) (c) (1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Measurements Group, Inc. specifically disclaims any and all form of liability and/or responsibility for the application of this product.

**PREPARED BY:** R. L. Fridley

**DATE:** August 2, 1995



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Prep Conditioner A

August 14, 1995

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

**MSDS #** MGM046D

919-365-3800

CHEMTREC Telephone: 800-424-9300

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
7664-38-2	Phosphoric Acid	10.0
7732-18-5	Distilled Water	90.0

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

**Inhalation:** YES

**Skin:** YES

**Ingestion:** Accidental

**Health Hazards (Acute and Chronic):** None known

**Carcinogenicity:**

NTP:	Not listed
IARC Monographs:	Not listed
OSHA Regulated:	Not listed

### Signs and Symptoms of Exposure:

**INHALATION:** May cause severe irritation of respiratory system. In confined areas, vapors in high concentrations are anesthetic. Over-exposure may result in light-headedness and staggering gait. Mist may cause coughing, sneezing, salivation, and difficult breathing.

**EYE CONTACT:** May cause severe irritation or burns.

**SKIN CONTACT:** May cause severe irritation or burns.

**INGESTION:** May cause burns to mouth, throat, and stomach.



**SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION**

**Respiratory Protection:** Self-contained breathing apparatus is recommended for emergency use.

**Ventilation:**

**Local Exhaust:** Keep below TLV

**Mechanical:** Keep below TLV

**Special:** N/A

**Other:** N/A

**Protective Gloves:** Chemical resistant or rubber gloves recommended.

**Eye Protection:** Chemical safety glasses or faceshield recommended.

**Other Protective Clothing or Equipment:** Rubber apron or suitable protective clothing. Safety shower and eye wash station should be available.

**Work / Hygienic Practices:** Wash thoroughly after using.

**SECTION 8: HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:** Store below 80°F (27°C). Keep containers tightly sealed. Avoid storing or mixing with materials containing chlorine.

**Other Precautions:** Avoid eye and skin contact. Avoid breathing mist.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Boiling Point:</b>	210°F to 212°F (99°C to 100°C)
<b>Vapor Pressure (mmHg):</b>	N/A
<b>Vapor Density (Air = 1):</b>	N/A
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	1.36
<b>Melting Point:</b>	N/A
<b>Evaporation Rate (BuAc = 1):</b>	<1
<b>Volatile Organic Compounds:</b>	None
<b>Solubility in Water:</b>	Complete

**Appearance and Odor:** Clear to slightly turbid liquid; no odor.



**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
7664-38-2	Phosphoric Acid	10.0

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

**SECTION 15: OTHER INFORMATION**

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g) (2) (c) (1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Measurements Group, Inc. specifically disclaims any and all form of liability and/or responsibility for the application of this product.

**PREPARED BY:** R. L. Fridley

**DATE:** August 14, 1995



# HYSOL

Aerospace Products

## EA 934NA

### STRUCTURAL ADHESIVES

#### DESCRIPTION

Hysol® EA 934NA is a two component thixotropic paste adhesive which cures at room temperature and possesses superior strength to 350°F/177°C and higher. Its thixotropic nature and good compressive strength make it ideal for potting, filling and fairing, as well as for shim applications. It is qualified to MMM-A-132 Type 1, Class 3 with a room temperature cure.

#### FEATURES

- Room Temperature Cure
- 350°F/177°C Performance
- MMM-A-132 Qualified
- Good Gap Filler
- Potting Material
- Develops Strength Rapidly

#### UNCURED ADHESIVE PROPERTIES

	Part A	Part B	Mixed
Color	Gray	Amber	Gray
Viscosity @ 77°F Brookfield, HBT	5000 - 9000 Poise Spdl 7 @ 20 RPM	25 Poise Spdl 1 @ 20 RPM	800 Poise Spdl 6 @ 20 RPM
Viscosity, 25°C Brookfield, HBT	500 - 900 Pa·s Spdl 2 @ 2.1 rad/sec	2.5 Pa·s Spdl 1 @ 2.1 rad/sec	80 Pa·s Spdl 6 @ 2.1 rads/sec
Density (g/ml)	1.59	0.96	1.36
Shelf Life @ < 0°F/-18°C (from date @ < 40°F/4°C of shipment) @ < 77°F/25°C @ < 90°F/32°C	1 year 1 year 3 mos 2 mos	1 year 1 year 1 year 1 year	
This material will normally be shipped at ambient conditions, which will not alter our standard warranty, provided that the material is placed into its intended storage upon receipt. Premium shipment is available upon request.			

#### HANDLING

**Mixing** - This product requires mixing two components together just prior to application to the parts to be bonded. Complete mixing is necessary. The temperature of the separate components prior to mixing is not critical, but should be close to room temperature.

Mix Ratio	Part A	Part B
By Weight	100	33

*Note: Volume measurement is not recommended for structural applications unless special precautions are taken to assure proper ratios.*

**Pot Life** (450 gm mass) 40 minutes  
Method - ASTM D 2471 in water bath.



## APPLICATION

**Mixing** – Combine Part A and Part B in the correct ratio and mix thoroughly. THIS IS IMPORTANT! Heat buildup during or after mixing is normal. Do not mix quantities greater than 1 pound as dangerous heat buildup can occur causing uncontrolled decomposition of the mixed adhesive. TOXIC FUMES CAN OCCUR, RESULTING IN PERSONAL INJURY. Mixing smaller quantities will minimize the heat buildup.

**Applying** – Bonding surfaces should be clean, dry and properly prepared. For optimum surface preparation consult the Hysol Surface Preparation Guide. The bonded parts should be held in contact until the adhesive is set. Handling strength for this adhesive will occur in 8 hours at 77°F/25°C, after which the support tooling or pressure used during cure may be removed. (Alternates are: 20 minutes at 140°F/60°C or 1 minute at 205°F/96°C.) Since full bond strength has not yet been attained, load application should be small at this time.

**Curing** – Hysol EA 934NA may be cured for 5-7 days at 77°F/25°C to achieve normal performance. Accelerated cures up to 200°F/93°C (for small masses only) may be used as an alternative. For example, 1 hour at 200°F/93°C will give complete cure.

**Cleanup** – It is important to remove excess adhesive from the work area and application equipment before it hardens. Denatured alcohol and many common industrial solvents are suitable for removing uncured adhesive. Consult with your supplier's information pertaining to the safe and proper use of solvents.

## BOND STRENGTH PERFORMANCE

### Tensile Lap Shear Strength

Tensile lap shear strength tested per ASTM D 1002 after curing for 7 days at 77°F/25°C. Adherends are 2024-T3 clad aluminum treated with phosphoric acid anodize per BAC 5555.

Test Temperature, °F/°C	Typical Results (PSI/MPa)
-67/-55	2,800/19.3
77/ 25	3,100/21.4
180/ 82	1,800/12.4
300/149	1,100/ 7.6
500/260	450/ 3.1

After Exposure to the following conditions*:	Typical Results (PSI/MPa)
77°F/25°C Water-30 days	3,500/24.1
Isopropyl Alcohol-7 days	3,300/22.8
Hydraulic Oil-7 days	3,500/24.1
JP-4 Fuel-7 days	3,500/24.1
Salt Spray-105°F/41°C-30 days	3,300/22.8

\*Test temperature on all exposure tests is 77°F/25°C

### Service Temperature

Service temperature is defined as that temperature at which this adhesive still retains 1000 PSI/6.9 MPa using test method ASTM D 1002 and is 300°F/149°C.

## Bulk Resin Properties

**Tensile Properties** – tested using 0.125 inch/3.175mm castings per ASTM D 638.

	Typical Results
Tensile Strength, PSI @ 77°F/MPa @ 25°C	5,800/40
Tensile Modulus, KSI @ 77°F/GPa @ 25°C	5,50/3.8
Elongation at Break, % @ 77°F/25°C	1.2
Shore D Hardness @ 77°F/25°C	85
T <sub>g</sub> dry (Cure 7 days @ 77°F/25°C)	159°F/71°C
(Cure 1 hour @ 200°F/93°C)	264°F/129°C

**Compressive Properties** – tested using 0.5 inch/1.27cm castings per ASTM D 695.

Compressive Strength, PSI @ 77°F (ultimate)/MPa @ 25°C	9,500/65.5
PSI @ 300°F (ultimate)/MPa @ 149°C	2,500/17.2

**Electrical Properties** – tested per ASTM D 149, D 150.

Dielectric Constant (1 KHz, 77°F/25°C)	7.24
Dissipation Factor (1 KHz, 77°F/25°C)	0.028



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## HANDLING PRECAUTIONS

Before using this product, read the Material Safety Data Sheets carefully.

For industrial use only.

### General:

Use these products with adequate ventilation. Do not get in eyes or on skin. Avoid breathing the vapors. Wash thoroughly with soap and water after handling. Empty containers retain product residue and vapors so obey all precautions when handling empty containers.

### PART A

**WARNING!** The uncured adhesive causes eye irritation and may cause skin irritation or allergic dermatitis. Contains epoxy resins.

### PART B

**DANGER!** Causes severe skin and eye burns. Prolonged or repeated contact may cause allergic skin reactions. Contains diethylenetriamine.

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## AVAILABILITY

This Hysol Aerospace Product is available from Dexter Aerospace Materials Division, 2850 Willow Pass Road, P.O. Box 312, Pittsburg, CA 94565-0031. Telephone 510/458-8000. FAX 510/458-8030.

Revised 3/92

Properties listed are typical values and are not intended for use in preparing specifications. Actual values may vary. Recommendations and suggestions contained herein are limited to reasonable commercial use. No express warranties are intended by any representation and there are no warranties which extend beyond the description on the face hereof. The user is advised to use cure conditions when evaluating this product that are as representative as possible of those used in the actual manufactured item.



THE DEXTER CORPORATION

HYSOL AEROSPACE PRODUCTS  
2850 Willow Pass Road  
P.O. Box 312  
Pittsburg, CA 94565-0031  
Tel: (510) 458-8000  
Fax: (510) 458-8030



# MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT:** M-Prep Neutralizer 5A

August 14, 1995

Measurements Group, Inc.  
Post Office Box 27777  
Raleigh, NC 27611

MSDS # MGM048D

919-365-3800

CHEMTREC Telephone: 800-424-9300

## SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
1336-21-6	Ammonium Hydroxide	<0.02
7601-54-9	Trisodium Phosphate	<0.05
1303-96-4	Sodium Tetraborate Pentahydrate	<0.01
7732-18-5	Distilled Water	99.92

## SECTION 3: HEALTH HAZARD DATA

### Routes of Entry:

Inhalation: YES

Skin: YES

Ingestion: Accidental

**Health Hazards (Acute and Chronic):** Ammonium hydroxide is irritating and corrosive to body tissues and a sensitized person may react to even dilute solutions.

### Carcinogenicity:

NTP: Not listed  
IARC Monographs: Not listed  
OSHA Regulated: Not listed

### Signs and Symptoms of Exposure:

**INHALATION:** Headache, coughing, and possible lung damage (edema and difficulty in breathing). Excessive inhalation of vapors is irritating to the mucous membranes of the respiratory tract.



**SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION**

**Respiratory Protection:** For air contaminants above TLV or permissible limits use NIOSH approved respirator for organic vapors.

**Ventilation:**

**Local Exhaust:** Keep below TLV

**Mechanical:** Keep below TLV

**Special:** N/A

**Other:** N/A

**Protective Gloves:** Neoprene or rubber gloves are recommended.

**Eye Protection:** Full face shield or chemical safety goggles are recommended.

**Other Protective Clothing or Equipment:** Rubber apron is recommended. Safety shower should be available in local area.

**Work / Hygienic Practices:** Use good housekeeping practices. Wash thoroughly after use.

**SECTION 8: HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:** Store below 80°F (27°C) in dry place. Keep containers tightly sealed.

**Other Precautions:** Avoid breathing vapors and direct contact.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Boiling Point:</b>	212°F (100°C)
<b>Vapor Pressure (mmHg):</b>	760 mmHg @ 100°C
<b>Vapor Density (Air = 1):</b>	1.0
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	1.0
<b>Melting Point:</b>	32°F (0°C)
<b>Evaporation Rate (BuAc = 1):</b>	<1
<b>Volatile Organic Compounds:</b>	0%
<b>Solubility in Water:</b>	100%

**Appearance and Odor:** Colorless; mild ammonia odor.



**SECTION 13: TRANSPORTATION INFORMATION**

SHIPPING NAME NUMBER	CLASS	UN
Ammonia Solutions Corrosive Material	8	2672

**SECTION 14: REGULATORY INFORMATION****SECTION 313 SUPPLIER NOTIFICATION:**

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
NONE		

**TSCA NOTIFICATION:**

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

**SECTION 15: OTHER INFORMATION**

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g)(2)(c)(1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Measurements Group, Inc. specifically disclaims any and all form of liability and/or responsibility for the application of this product.

**PREPARED BY:** R. L. Fridley

**DATE:** August 14, 1995



# MATERIAL SAFETY DATA SHEET

[Approved by U.S. Department of Labor "Essentially Similar" to Form OSHA-20]

Manufacturer's Name Amchem Products, Inc.  
 Address (number, street) Brookside Avenue  
 (City, state, zip code) Ambler, PA 19002  
 Emergency Telephone Number: (215) 628-1230  
 Information Supplied by: Hugh Gehman  
 Date: 6/7/82 Title: Coordinator of Registration and Labeling

Product Trade Name Alodine 1201  
 Chemical Name & Synonyms \_\_\_\_\_  
 Chemical Family \_\_\_\_\_ Formula \_\_\_\_\_  
 Special Hazards \_\_\_\_\_

## II. HAZARDOUS INGREDIENTS

MATERIAL	%	TLV (Units)	MATERIAL	%	TLV (Units)
Chromic acid	< 1	0.05mg/M <sup>3</sup>	<b>CONFIDENTIAL</b>		
Potassium ferricyanide	< 1		Proprietary Information		
Hydrofluoric acid	< 0.2	2.5mg/M <sup>3</sup>	Amchem Products, Inc.		

## III. PHYSICAL DATA

a. Boiling point (°F) < 212  
 b. Vapor pressure (mmHg) \_\_\_\_\_  
 c. Vapor density (Air = 1) \_\_\_\_\_  
 d. Solubility in water (%) Complete  
 e. Specific gravity (H<sub>2</sub>O = 1) 1.008  
 f. Per cent volatile by volume \_\_\_\_\_  
 g. Evaporation rate (\_\_\_\_\_ = 1) \_\_\_\_\_  
 h. Appearance & odor: Amber liquid, no odor

## IV. FIRE AND EXPLOSION HAZARD DATA

a. Flash point (state method, °F) None  
 b. Ignition temperature (°F) \_\_\_\_\_  
 c. Flammable limits in air, LEL \_\_\_\_\_ UEL \_\_\_\_\_  
 d. Extinguishing media: Water  
 e. Special fire fighting procedures: None  
 f. Unusual fire and explosion hazards: None, however if organic material such as rags, paper, sawdust, etc. become saturated with this material and then dry, spontaneous combustion may result

## V. HEALTH HAZARD DATA

a. Physiological Properties:  
 1. Local effects to skin: Will irritate  
 2. Genetic Hazard \_\_\_\_\_  
 3. Acute oral toxicity (LD<sub>50</sub> if available): Will burn mucous membranes  
 4. Dermal absorption (LD<sub>50</sub> if available): \_\_\_\_\_  
 5. Inhalation effects (LC<sub>50</sub> if available): \_\_\_\_\_  
 6. Threshold Limit Value (or estimate): 0.05mg/M<sup>3</sup> (based on chromic acid)  
 7. Local effects to eyes: Will irritate and may burn



## b. Emergency and First Aid Procedures:

Special Hazards \_\_\_\_\_

1. Ingestion: Dilute by drinking several glasses of water or milk. 4. Inhalation: \_\_\_\_\_Call a Doctor.2. Eye Contact: Flush immediately with copious amounts of water for  
at least 15 minutes. Call a Doctor.3. Skin Contact: a) Flush with cold water for 5-10 minutes. b) 5. Other Health Data: \_\_\_\_\_  
Soak affected area in an iced solution of ZEPHIRAN CHLORIDE  
(a readily available product at any drug store). The strength  
of the soak is .13% or 30cc. of 17% ZEPHIRAN CHLORIDE CONCENTRATE per  
each gallon of iced distilled water. c) Soak affected part for 1 hour. Call a Doctor.

## VI. REACTIVITY DATA

a. Stability: Stable ☒ Unstable \_\_\_\_\_ Conditions to avoid: \_\_\_\_\_b. Incompatible Materials: Organic materials, reducing agents

c. Hazardous Decomposition Products: \_\_\_\_\_

d. Hazardous Polymerization: May occur \_\_\_\_\_ Will not occur ☒ Conditions to avoid: \_\_\_\_\_

## VII. SPILL OR LEAK PROCEDURES

Transfer unspilled material to a clean polyethylene container. Treat spilled material

a. Steps to be taken for spill or leak: with dilute solution of sodium metabisulfite to reduce chrome. Adjust pH to 7-8 withb. Waste disposal methods: lime and flush to treatment plant with plenty of water.

## VIII. SPECIAL PROTECTION INFORMATION

a. Respiratory protection (Specify type) requirements: Acid mist cartridge d. Eye protection required: Safety gogglesb. Ventilation requirements (local exhaust, general dilution, special): NIOSH approved Local \_\_\_\_\_c. Protective gloves required: Rubber e. Other required equipment: Rubber aprons

## X. SPECIAL PRECAUTIONS

a. Precautionary label required? If yes, please attach. No. Amchem Warning Statement 30.b. Precautions to be taken in handling and storing: Store in a cool place.

c. Other precautions: \_\_\_\_\_



U.S. DEPARTMENT OF LABOR  
WAGE AND LABOR STANDARDS ADMINISTRATION  
Bureau of Labor Standards

MATERIAL SAFETY DATA SHEET

CONFIDENTIAL

Proprietary Information  
Amchem Products, Inc

SECTION I

MANUFACTURER'S NAME <b>AMCHEM PRODUCTS, INC.</b>		EMERGENCY TELEPHONE NO. <b>(215) 646-1700 628-1230</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>Brookside Avenue, Ambler, Penna. 19002</b>		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS <b>Alumiprep 33</b>
CHEMICAL FAMILY	FORMULA	

SECTION II HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Phosphoric Acid				20-30	
Glycol Ethers				5-10	
Surface Active Agents				2-3	
Fluoride Salts				1-2	

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	> 2120	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.145
VAPOR PRESSURE (mm Hg.)	-	PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	-	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Liquid		
APPEARANCE AND ODOR	Colorless, slight odor		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) Nonflammable	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA CO <sub>2</sub> , foam, or vaporizing liquid extinguishers.			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			



## SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

1 mg./M<sup>3</sup> (air) based on phosphoric acid

EFFECTS OF OVEREXPOSURE

Prolonged inhalation may cause toxic effects and injury to mucous membranes and respiratory tract.

EMERGENCY AND FIRST AID PROCEDURES

Skin contact - wash thoroughly with soap and water. Eye contact - flush with

large amounts of water immediately. Call a doctor. Ingestion - Drink milk of magnesia, aluminum hydroxide gel, or limewater followed by several glasses of water. Call a doctor.

## SECTION VI REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATABILITY (Materials to avoid)

strong alkaline materials

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

## SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Transfer contents to a clean, glass, mild steel or SS steel container.

Discard broken container and flush away any residual materials with plenty of water.

WASTE DISPOSAL METHOD

Neutralize with a dilute alkaline solution.

## SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Goggles, face shields

OTHER PROTECTIVE EQUIPMENT

Aprons

## SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in a cool, dry area.

OTHER PRECAUTIONS



OUTSIDE SAKS  
MIKE  
L.B. BUIR  
860 684  
4525

A

# MATERIAL SAFETY DATA SHEET

DEXTER AEROSPACE  
MATERIALS DIVISION  
2850 Willow Pass Road  
Pittsburg, California USA  
94565-3299

KRISTY  
CUSTOMER  
SERVICE

800-257-7522

20191-0001 WOLCOTT PARK INC

ORDER: 12577

1-716-342-3120

## EMERGENCY ASSISTANCE

For Help in Chemical Emergencies Call CHEMTREC Anytime

Within North America call Toll Free (800) 424-9300  
Outside North America call Collect (202) 483-7616

## SECTION 1. MATERIAL IDENTIFICATION

TRADE NAME: HYSOL EA 934NA QT SYSTEM PART A PREPARED: JUNE 1995 REV: 08

PRODUCT CODE: AS9174016 SHIP CODE: 2004AB SUPERCEDES: MAY 1993 REV: 07

EMERGENCY OVERVIEW:  
WARNING! CAUSES EYE IRRITATION AND MAY CAUSE SKIN IRRITATION.  
CONTAINS EPOXY RESINS. AVOID CONTACT. WASH AFTER  
HANDLING.

## SECTION 2. COMPOSITION

The composition of this material is proprietary. However, the composition will be disclosed as required pursuant to 29 CFR 1910.1200(i).

COMPONENT	CAS No.	Wt. %	EXPOSURE LIMITS, ppm		
			OSHA PEL	ACGIH TLV	OTHER LIMITS
1. Polymer of epichlorohydrin, phenol-formaldehyde novolac resin	28064-14-4	20-60	None	None	None
2. 4-Glycidyloxy-n, n-diglycidyl-aniline	5026-74-4	15-40	None	None	None
3. Aluminum Powder	7429-90-5	10-30	15 mg/m3	10 mg/m3	None
4. Silica	112945-52-5*	1-5	6 mg/m3	6 mg/m3	None

\*This CAS# has been given to us by the supplier, but the material is TSCA listed as 7631-86-9.

## SECTION 3. HAZARDS IDENTIFICATION/POTENTIAL HEALTH EFFECTS

ROUTE(S) OF EXPOSURE:  
Skin contact, inhalation

SIGNS AND SYMPTOMS OF EXPOSURE:  
Skin rash, irritation

IMMEDIATE EFFECTS:

DEXTER AEROSPACE  
HYSOL EA 934NA QT SYSTEM

PART A

PRINTED: 3/24/97  
PAGE: 1



**SECTION 3. HAZARDS IDENTIFICATION/POTENTIAL HEALTH EFFECTS AS9174016 ..CONTINUED..**

Brief contact may irritate the skin or cause a rash.

**LONG TERM EFFECTS:**

Repeated or prolonged skin contact may result in allergic sensitization.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:**

Skin sensitization.

**CARCINOGENICITY:**

Neither this material nor any of its components is considered a carcinogen.

**SECTION 4. FIRST AID MEASURES**

**EYE:**

Flush eyes with water for 15 minutes. If irritation persists, get medical attention.

**SKIN:**

Wash skin thoroughly with soap and water. If irritation persists, get medical attention.

**INHALATION:**

Remove victim to fresh air. If symptoms persist, get medical attention.

**INGESTION:**

Drink plenty of water. Get medical attention immediately.

**SECTION 5. FIRE-FIGHTING MEASURES**

**FLASHPOINT, DEG. F:**

Not tested

**EXPLOSIVE LIMITS,**

**METHOD USED:**

Not tested

**LOWER/UPPER:**

Not tested

**EXTINGUISHING MEDIA:**

Dry chemical, or halon fire extinguisher, or water spray, foam or fog.

**FIRE FIGHTING INSTRUCTIONS:**

Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear. Cartridge respirators do not provide adequate protection for fire fighters or exotherm mitigation.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:**

May liberate large quantities of dense foul-smelling smoke which may contain unidentified toxic gasses.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

**IF MATERIAL LEAKS OR SPILLS:**

Wear protective clothing, gloves and safety glasses. Scrape up or shovel into DOT approved waste containers.

**NEUTRALIZING AGENT:**

Not applicable

**SECTION 7. STORAGE AND HANDLING**

**STORAGE PRECAUTIONS:**

Refrigerated storage is recommended to maintain product quality. This product may be stored at 40 deg. F for up to 12 months.

**HANDLING PRECAUTIONS:**

Follow curing schedule as recommended in product literature. See also MSDS Section 9.



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**SECTION 7. STORAGE AND HANDLING**

---

AS9174016 ..CONTINUED.

**REPAIR AND MAINTENANCE PRECAUTIONS:**

Do not cut, grind, weld, or drill on or near this container.

---

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

---

**EYE PROTECTION:**

Wear safety glasses with side shields or chemical goggles.

**SKIN PROTECTION:**

Wear butyl rubber, PVC, or nitrile rubber gloves.

**RESPIRATORY PROTECTION:**

Unnecessary with adequate exhaust ventilation.

**ENGINEERING CONTROLS:**

Local exhaust ventilation at the point of use.

**OTHER PROTECTIVE MEASURES:**

An eyewash and safety shower should be nearby and ready for use.

---

**SECTION 9. STABILITY AND REACTIVITY**

---

**STABILITY:**

Stable

**POLYMERIZATION:**

May occur

**CONDITIONS TO AVOID:**

Avoid mixing resin (Part A) and curing agent (Part B) in batches greater than 1 pound unless you plan to use immediately. Do not heat mixed adhesive above 125 deg. F unless curing surfaces to be bonded. Failure to observe these precautions may result in excessive heat build-up causing an exotherm. The exotherm has the potential for release of toxic gasses.

**INCOMPATIBILITY:**

Strong oxidizing agents, strong Lewis or mineral acids.

**HAZARDOUS DECOMPOSITION PRODUCTS:**

CO, NOx, aldehydes, acids and undetermined organics.

---

**SECTION 10. PHYSICAL AND CHEMICAL PROPERTIES**

---

BOILING POINT, DEG. F: Undefined

PHYSICAL STATE: Paste

SPECIFIC GRAVITY, WATER=1: 1.59

VISCOSITY, p: 5000-9000  
Brookfield, Spdl. 7

**SOLUBILITY IN WATER:**

Negligible

**CORROSION RATE:**

Not applicable

**MAGNETISM:**

Not applicable

**AUTOIGNITION TEMPERATURE:**

Not tested

**DECOMPOSITION TEMPERATURE:**

Not tested

**VAPOR PRESSURE, mmHg:**

Nil



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**SECTION 10. PHYSICAL AND CHEMICAL PROPERTIES**

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AS9174016 ..CONTINUED..

VAPOR DENSITY, AIR=1:  
>1

VOLATILE ORGANIC CONTENT, g/l (Test Method):  
<10 g/l (Estimate)

APPEARANCE/ODOR:  
Viscous gray paste with slight odor

pH:  
Undefined

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**SECTION 11. TOXICOLOGICAL INFORMATION**

---

This mixture has not been tested as a whole. However, data for its identified components include:

	COMPONENT 1	COMPONENT 2	COMPONENT 3
ORAL, rat LD50:	>4000 mg/kg	1000 mg/kg	No data found
DERMAL, rabbit LD50:	No data found	>4000 mg/kg	No data found
INHALATION, rat LC50:	No data found	No data found	No data found
	COMPONENT 4		
ORAL, rat LD50:	No data found		
DERMAL, rabbit LD50:	No data found		
INHALATION, rat LC50:	No data found		

OTHER INFORMATION:  
Component 2 has exhibited mutagenicity in bacteria.

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**SECTION 12. DISPOSAL CONSIDERATIONS**

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DISPOSAL AS A WASTE:  
This material, as a waste, is not considered a RCRA hazardous waste. However, incineration in an EPA-approved waste incinerator is a preferred disposal practice.

Chemical additions, processing, or otherwise altering this material may make the waste management information herein incomplete, inaccurate, or otherwise inappropriate. Additionally, state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding proper disposal of this material.

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**SECTION 13. TRANSPORT INFORMATION**

---

U.S. DOT SHIPPING INFORMATION:  
Proper Shipping Name: ADHESIVES, NOI NON-REGULATED

REPORTABLE QUANTITY:  
Not applicable

POSTAL SERVICE:  
This material is allowed to be sent through the Postal Service.



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**SECTION 13. TRANSPORT INFORMATION**

---

AS9174016 ..CONTINUED.

**IATA SHIPPING INFORMATION:**

Proper Shipping Name: ADHESIVES, NOI NON-REGULATED

---

**SECTION 14. REGULATORY INFORMATION**

---

**U.S. FEDERAL REGULATIONS:**

All components of this material are listed on the TSCA Inventory.

This material is considered an irritant for Hazard Communication purposes

None of the ingredients in this material is listed on the SARA 313 List.

**U.S. STATE REGULATIONS:**

1. Massachusetts  
Component 4 is on the Massachusetts Hazardous Substance List.
2. New Jersey  
Component 4 is on the New Jersey Right to Know Hazardous Substance List.
3. Pennsylvania  
Component 4 is on the Pennsylvania Hazardous Substance List.

**INTERNATIONAL REGULATIONS:**

Canada WHMIS: Hazard class - D2B

Europe EEC: Risk phrase(s) - R36,38,43

Safeguard phrase(s) - S24,37,44,51

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**SECTION 15. SUPPLEMENTAL INFORMATION**

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HAZARD RATING SYSTEM: HMIS: Health - 1 Flammability - 1 Reactivity - 1

PREPARED BY: M.S.D.S. Department, Dexter Aerospace Materials Division  
(510) 458-8000 x262 or x263**REVISION INDICATORS:**

June, 1995: Updated Section 2 and Section 14 because of supplier's updated information.

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**SECTION 16. DISCLAIMER**

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The information and recommendations contained herein are based upon data believed to be correct. However, since much of the information has been received from sources outside our company, we cannot guarantee its accuracy or completeness. Health and safety precautions contained within this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this data in order to comply with all applicable laws and regulations. Additionally, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.



## MATERIAL SAFETY DATA SHEET

DEXTER AEROSPACE  
MATERIALS DIVISION  
2850 Willow Pass Road  
Pittsburg, California USA  
94565-3299

20191-0000 WOLCOTT PARK INC

ORDER: 15552

### EMERGENCY ASSISTANCE

For Help in Chemical Emergencies Call CHEMTREC Anytime

Within North America call Toll Free (800) 424-9300

Outside North America call Collect (202) 483-7616

### SECTION 1. MATERIAL IDENTIFICATION

TRADE NAME: HYSOL EA 934NA QT SYSTEM PART B PREPARED: JANUARY 1995 REV: 06

PRODUCT CODE: AS9174016 SHIP CODE: 2735AE2 SUPERCEDES: OCTOBER 1993 REV: 07

#### EMERGENCY OVERVIEW:

WARNING! CAUSES EYE AND SKIN BURNS. CONTAINS DIETHYLENE  
TRIAMINE AND TRIETHYLENE TETRAMINE.

AVOID CONTACT. AVOID BREATHING VAPORS. WASH AFTER HANDLING.

### SECTION 2. COMPOSITION

The composition of this material is proprietary. However, the composition will be disclosed as required pursuant to 29 CFR 1910.1200(i).

COMPONENT	CAS No.	Wt. %	EXPOSURE LIMITS, ppm		
			OSHA PEL	ACGIH TLV	OTHER LIMITS
1. Polyamide Resin	68082-29-1	40-70	None	None	None
2. Diethylene- triamine	111-40-0	10-30	1 ppm (skin)	1 ppm (skin)	None
3. Triethylene- tetramine	112-24-3	5-10	None	None	None

### SECTION 3. HAZARDS IDENTIFICATION/POTENTIAL HEALTH EFFECTS

#### ROUTE(S) OF EXPOSURE:

Skin contact, inhalation

#### SIGNS AND SYMPTOMS OF EXPOSURE:

Skin or eye irritation, chest discomfort

#### IMMEDIATE EFFECTS:

This material is corrosive to eyes and skin. Brief contact may cause chemical burns. Vapors and mists will irritate nose and throat.

#### LONG TERM EFFECTS:

Repeated or prolonged skin contact may result in burns and possible allergic sensitization.



SECTION 3. HAZARDS IDENTIFICATION/POTENTIAL HEALTH EFFECTS AS9174016 ..CONTINUED..

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:**  
Skin sensitization.

**CARCINOGENICITY:**  
Neither this material nor any of its components is considered a carcinogen.

SECTION 4. FIRST AID MEASURES

**EYE:**  
Flush eyes with lots of running water for 15 minutes. Get medical attention immediately.

**SKIN:**  
Wash skin thoroughly with soap and water. If irritation persists, get medical attention.

**INHALATION:**  
Remove victim to fresh air. If symptoms persist, get medical attention.

**INGESTION:**  
Drink plenty of water. Get medical attention immediately.

SECTION 5. FIRE-FIGHTING MEASURES

<b>FLASHPOINT, DEG. F:</b>	Not tested	<b>EXPLOSIVE LIMITS,</b>	
<b>METHOD USED:</b>	Not tested	<b>LOWER/UPPER:</b>	Not tested

**EXTINGUISHING MEDIA:**  
Dry chemical, or Halon fire extinguisher, or water spray, foam or fog.

**FIRE FIGHTING INSTRUCTIONS:**  
Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear. Cartridge respirators do not provide adequate protection for fire fighters or exotherm mitigation.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:**  
May liberate large quantities of dense foul-smelling smoke which may contain unidentified toxic gasses.

SECTION 6. ACCIDENTAL RELEASE MEASURES

**IF MATERIAL LEAKS OR SPILLS:**  
Wear protective clothing, gloves and safety glasses. Absorb spill with sorbent material such as vermiculite or sand. Scrape up or shovel into DOT-approved waste containers.

**NEUTRALIZING AGENT:**  
Not applicable

SECTION 7. STORAGE AND HANDLING

**STORAGE PRECAUTIONS:**  
This product may be stored at room temperature for up to 12 months. Keep container tightly closed when not in use.

**HANDLING PRECAUTIONS:**  
Follow curing schedule and mixing ratios as recommended in product literature. See also MSDS Section 9. Empty containers retain product residue so obey hazard warnings and handle empty containers as if they were full.



## SECTION 7. STORAGE AND HANDLING

AS91/4016

..CONTINUED..

Do not cut, grind, weld, or drill on or near this container.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### EYE PROTECTION:

Wear safety glasses with side shields or chemical goggles.

### SKIN PROTECTION:

Wear butyl rubber, PVC, or nitrile rubber gloves and long-sleeved shirt and trousers.

### RESPIRATORY PROTECTION:

If local exhaust ventilation is inadequate, a respirator equipped with organic vapor cartridges may be appropriate.

### ENGINEERING CONTROLS:

Local exhaust ventilation at the point of use.

### OTHER PROTECTIVE MEASURES:

An eyewash and safety shower should be nearby and ready for use.

## SECTION 9. STABILITY AND REACTIVITY

### STABILITY:

Stable

### POLYMERIZATION:

May occur

### CONDITIONS TO AVOID:

Avoid mixing resin (Part A) and curing agent (Part B) in batches greater than 1 pound unless you plan to use immediately. Do not heat mixed adhesive above 125 deg. F unless curing surfaces to be bonded. Failure to observe these precautions may result in excessive heat build-up causing an exotherm. The exotherm has the potential for release of toxic gasses.

### INCOMPATIBILITY:

Strong oxidizing agents, strong Lewis or mineral acids.

### HAZARDOUS DECOMPOSITION PRODUCTS:

CO, NOx, aldehydes, acids and undetermined organics.

## SECTION 10. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT, DEG. F: 405

PHYSICAL STATE: Liquid

SPECIFIC GRAVITY, WATER-1: 0.96

VISCOSITY, p: 10-30  
Brookfield, Spdl. 1

SOLUBILITY IN WATER:  
100%

CORROSION RATE:  
Not applicable

MAGNETISM:  
Not applicable

AUTOIGNITION TEMPERATURE:  
Not tested

DECOMPOSITION TEMPERATURE:  
Not tested

VAPOR PRESSURE mmHg



---

**SECTION 10. PHYSICAL AND CHEMICAL PROPERTIES**

---

AS91/4016 ..CONTINUED..

Nil

VAPOR DENSITY, AIR=1:  
>1VOLATILE ORGANIC CONTENT, g/l (Test Method):  
<10 g/l (Estimate)APPEARANCE/ODOR:  
Amber liquid with ammoniacal odorpH:  
Undefined

---

**SECTION 11. TOXICOLOGICAL INFORMATION**

---

This mixture has not been tested as a whole. However, data for its identified components include:

	COMPONENT 1	COMPONENT 2	COMPONENT 3
ORAL, rat LD50:	>2000 mg/kg	1080 mg/kg	No data found
DERMAL, rabbit LD50:	>2000 mg/kg	1090 mg/kg	No data found
INHALATION, rat LC50:	No data found	No data found	No data found

OTHER INFORMATION:  
No data found.

---

**SECTION 12. DISPOSAL CONSIDERATIONS**

---

**DISPOSAL AS A WASTE:**

This material, as a waste, is not considered a RCRA hazardous waste. However, incineration in an EPA-approved waste incinerator is a preferred disposal practice.

Chemical additions, processing, or otherwise altering this material may make the waste management information herein incomplete, inaccurate, or otherwise inappropriate. Additionally, state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding proper disposal of this material.

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**SECTION 13. TRANSPORT INFORMATION**

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**U.S. DOT SHIPPING INFORMATION:**Proper Shipping Name: AMINES, LIQUID, CORROSIVE, N.O.S.  
(DIETHYLENETRIAMINE/TRIETHYLENETETRAMINE)  
UN2735 HAZARD CLASS: 8 PG: IIREPORTABLE QUANTITY:  
Not applicable**POSTAL SERVICE:**

U.S. Postal Regulations prohibit the shipment of this material through the mails.

**IATA SHIPPING INFORMATION:**Proper Shipping Name: AMINES, LIQUID, CORROSIVE, N.O.S.  
(DIETHYLENETRIAMINE/TRIETHYLENETETRAMINE)  
UN2735 HAZARD CLASS: 8 PG: II



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**SECTION 14. REGULATORY INFORMATION**

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AS9174016 ...CONTINUED...

**U.S. FEDERAL REGULATIONS:**

All components of this material are listed on the TSCA Inventory.

This material is considered a corrosive for Hazard Communication purposes.

None of the ingredients in this material is listed on the SARA 313 List.

**U.S. STATE REGULATIONS:**

- 1) Massachusetts  
Compounds 2 and 3 are listed on the Massachusetts Substance List.
- 2) New Jersey  
Compounds 2 and 3 are listed on the New Jersey Right to Know Hazardous Substance List.
- 3) Pennsylvania  
Compound 2 is on the Pennsylvania Hazardous Substance List.

**INTERNATIONAL REGULATIONS:**

Canada WHMIS: Hazard class = E

Europe EEC: Risk phrase(s) = R34, 41, 43

Safeguard phrase(s) = S24/25, 26, 36/37/39

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**SECTION 15. SUPPLEMENTAL INFORMATION**

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HAZARD RATING SYSTEM: HMIS: Health = 2 Flammability = 1 Reactivity = 1

PREPARED BY: M.S.D.S. Department, Dexter Aerospace Materials Division  
(510) 458-8000 x262 or x263

**REVISION INDICATORS:**

January, 1995: Update shipping information under DOT and IATA and EEC  
Risk/Safeguard Phrases

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**SECTION 16. DISCLAIMER**

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The information and recommendations contained herein are based upon data believed to be correct. However, since much of the information has been received from sources outside our company, we cannot guarantee its accuracy or completeness. Health and safety precautions contained within this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this data in order to comply with all applicable laws and regulations. Additionally, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.



# MATERIAL SAFETY DATA BULLETIN

## MOBIL JET OIL II

### 1. PRODUCT AND COMPANY IDENTIFICATION

APPROVAL DATE: 07/06/98

PRODUCT NAME: MOBIL JET OIL II

SUPPLIER: MOBIL OIL CORP.

NORTH AMERICA MARKETING AND REFINING

3225 GALLOWS RD.

FAIRFAX, VA 22037

24 - Hour Emergency (call collect): 609-737-4411

Product and MSDS Information: 800-662-4525 609-224-4644

CHEMTREC: 800-424-9300 202-483-7616

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAMES AND SYNONYMS: SYN. HYDROCARBONS AND ADDITIVES

INGREDIENTS CONSIDERED HAZARDOUS TO HEALTH:

Substance Name	Wt%
-----	----
TRICRESYL PHOSPHATE (1330-78-5)	1-5
1-NAPHTHALENAMINE, N-PHENYL (90-30-2)	1-5

NOTE: This product contains 1.0% wt. P.A.N. (phenyl-alpha-naphthylamine)  
90-30-2.

See Section 15 for European Label Information.

See Section 8 for exposure limits (if applicable).



## 5. FIRE-FIGHTING MEASURES

**EXTINGUISHING MEDIA:** Carbon dioxide, foam, dry chemical and water fog.

**SPECIAL FIRE FIGHTING PROCEDURES:** Water or foam may cause frothing.

Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposure. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

**SPECIAL PROTECTIVE EQUIPMENT:** For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** None. Flash Point C(F): 204(400) (ASTM D-92). Flammable limits - LEL: NA, UEL: NA.

**NFPA HAZARD ID:** Health: 1, Flammability: 1, Reactivity: 0

**HAZARDOUS DECOMPOSITION PRODUCTS:** Carbon monoxide.

## 6. ACCIDENTAL RELEASE MEASURES

**NOTIFICATION PROCEDURES:** Report spills as required to appropriate authorities. U. S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to Coast Guard toll free number (800) 424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.

**PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:** Adsorb on fire retardant treated sawdust, diatomaceous earth, etc. Shovel up and dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal.

**ENVIRONMENTAL PRECAUTIONS:** Prevent spills from entering storm sewers or drains and contact with soil.

**PERSONAL PRECAUTIONS:** See Section 8

## 7. HANDLING AND STORAGE

**HANDLING:** Avoid ingestion. Avoid inhalation of mists. Avoid prolonged repeated skin contact. Wash thoroughly before eating or smoking. Keep away from feed or food products. Do not use on food processing machinery.

**STORAGE:** Store in a cool, dry, well ventilated area away from heat.



## 10. STABILITY AND REACTIVITY

STABILITY (THERMAL, LIGHT, ETC.): Stable.

CONDITIONS TO AVOID: Extreme heat.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide.

HAZARDOUS POLYMERIZATION: Will not occur.



which is indicative of a potential to produce delayed neurotoxicity. Repeated oral administration of 2 g/kg of a generic jet engine oil containing 3% tricresyl phosphate (TCP) (once/day, 5 days/week for 10 weeks) to hens (60mg/kg/day TCP) inhibited brain neuropathy target esterase (NTE) by 70% and caused ataxia or paralysis in 22 of 30 hens in this treatment group.

## 12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND EFFECTS: Not established.

## 13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration. Such burning may be limited pursuant to the Resource Conservation and Recovery Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at an appropriate government waste disposal facility. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

RCRA INFORMATION: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

## 14. TRANSPORT INFORMATION

USA DOT: NOT REGULATED BY USA DOT.

RID/ADR: NOT REGULATED BY RID/ADR.

IMO: NOT REGULATED BY IMO.

IATA: NOT REGULATED BY IATA.



## 16. OTHER INFORMATION

### Precautionary Label Text:

CONTAINS TRICRESYL PHOSPHATE, 1-NAPHTHALENAMINE, N-PHENYL-

#### WARNING!

Swallowing this product can cause nervous system disorders including paralysis. Prolonged or repeated breathing of oil mist, or prolonged or repeated skin contact can cause nervous system effects.

Never swallow. Wash hands after handling and before eating. Never use in or around food. Avoid prolonged or repeated overexposure to skin or lungs.

FIRST AID: If swallowed, seek immediate medical attention. If medical attention will be delayed, induce vomiting. In case of contact, wash skin with soap and water. Remove contaminated clothing.

For industrial use only. Not intended or suitable for use in or around a household or dwelling.

Never use empty container to carry water or food. Do not cut, puncture, or weld on or near container.

#### USE: AVIATION ENGINE OIL

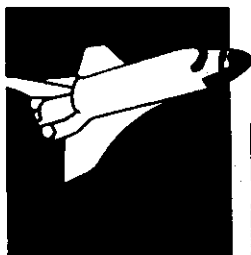
NOTE: MOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBS.

Please call the Customer Response Center on 800-662-4525 for formulation disclosure.

\*\*\*\*\*  
For Internal Use Only: MHC: 0\* 0\* 1\* 0\* 1\*, MPPEC: C, TRN: 430207-00,  
GLIS: 400268, CMCS97: 970570, REQ: MIAMI, SAFE USE: L  
\*\*\*\*\*

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# Product Data Sheet

**Synthetic**

## Mobil® Jet Oil II

Aircraft-Type Gas Turbine Lubricant

### Description

Mobil Jet Oil II gas turbine lubricant is a combination of a highly stable synthetic base fluid and a unique chemical additive package. The combination provides outstanding thermal and oxidative stability to resist deterioration and deposit formation in both the liquid and vapor phases, as well as excellent resistance to foaming.

The effective operating range of Mobil Jet Oil II is between -40°C and 204°C (-40°F and 400°F). Pour point is -54°C (-65°F). The product has a high specific heat in order to ensure good heat transfer from oil-cooled engine parts. In extensive laboratory testing and in-flight performance, Mobil Jet Oil II exhibits excellent bulk oil stability at temperatures up to 204°C (400°F). The evaporation rate at these temperatures is low enough to prevent excessive loss of volume.

### Application

Mobil Jet Oil II is recommended for aircraft gas turbine engines of the turbo-jet, turbo-fan, turbo-prop, and turbo-shaft (helicopter) types in commercial and military service. It also is recommended for aircraft-type gas turbine engines in industrial or marine application.

Mobil Jet Oil II is approved against U.S. Military Specification MIL-L-23699C, as well as by the following engine and accessory manufacturers:

### Engine Approvals

- Textron-Lycoming (Allied Signal)
- Allison Engine Co. (Rolls-Royce)
- General Electric Company
- Pratt & Whitney Group (United Technologies Corp.)

- SNECMA
- Pratt & Whitney, Canada
- Rolls-Royce Limited
- Garrett Turbine Engine Co.

- Sundstrand Corp. - Constant-speed drives and integrated-drive generators
- Westinghouse Aerospace Electrical Division - Generators

### Accessory Approvals

- Garrett (Allied Signal) - Auxiliary power units and air cycle machines
- Hamilton Standard Division, United Technologies Corp. - Starters

	Mobil Jet Oil II	MIL-L-23699C Requirements
Product Number	43020-7	-
Viscosity		
cSt at 100°C (212°F)	5.0	5.0 - 5.5
cSt at 40°C (102°F)	25.3	25.0 min
cSt at -40°C (-40°F)	11,000	13,000 max
% change at -40°C after 72 hr.	3.7	±6
Flash Point, °C (°F), min	268 (515)	246 (475)
Fire Point, °C (°F)	285 (545)	-
Autogenous Ignition Temp, °C (°F)	404 (760)	-
Pour Point, °C (°F)	-54 (-65)	-54 (-65) max
Specific Gravity, 15/15°C (60/60°F)	1.0035	-
TAN (mg KOH/g sample)	0.08	0.50 max
Evaporation Loss, %		
6.5 hr at 204°C (75°F), 29.5" Hg	5.0	10 max
6.5 hr at 232°C (450°F), 29.5" Hg	10.9	-
6.5 hr at 232°C (450°F), 5.5" Hg	33.7	-
Foam, ml		
Sequence 1, 24°C (75°F)	10	25 max
Sequence 2, 93°C (200°F)	15	25 max
Sequence 3, 75°C (after 200°F test)	10	25 max
Foam Stability, after 1 min settling, ml	0	0 max
Rubber Swell		
F Rubber, 72 hr at 204°C (400°F), %	19	5 - 25
H Rubber, 72 hr at 70°C (159°F), %	16	5 - 25
Silicone, 96 hr at 121°C (250°F), %	9	5 - 25
Tensile Loss, %	17	30 max
Sonic Shear Stability		
KV at 39°C (100°F), change, %	0	4 max
Ryder Gear		
Average lb/in	2750	-
% Hercules A	115	112 min



**MATERIAL SAFETY DATA SHEET****E-761 EPOXY GRAPHITE PREPREG**

Page 1 of 4

IDENTITY (used on label - list)	May be used to comply with OSHA Hazard Communication Standard, 29 CFR 1910.1200 Standard must be consulted for specific requirements.
E-761 EPOXY GRAPHITE PREPREG	

<b>SECTION I:</b>	
Manufacturer's Name	Emergency Telephone Number
FiberCote Industries, Inc.	(203) 755-1344
Address (No, St, City, St, Zip)	Information Telephone Number
172 E. Aurora St. Waterbury, CT 06708-2040	(203) 755-1344
Date Prepared - April 03, 1997	Signature of Preparer (Optional)

<b>SECTION II - HAZARDOUS INGREDIENTS / IDENTITY INFORMATION</b>				
Product Ingredients:		%		CAS
Woven Graphite Fabric		50 - 65		7440-44-0
Proprietary Catalyzed Epoxy Mixture		35 - 50		Mixture
Residual Organic Solvents		< 2		See Below
Hazardous Components: (Chemical Identity)	OSHA Pel 8 hr TWA	ACGIH TIV 8 hr TWA	% (Optional)	CAS
Acetone	750 ppm	750 ppm	<1.0	67-64-1
Methyl Ethyl Ketone	200 ppm	200 ppm	<1.0	78-93-3
Dimethylformamide	10 ppm	10 ppm	<1.0	68-12-2

The catalyzed Epoxy Resin Mixture is a trade secret. One or more of the ingredients of the resin mixture may be considered to be hazardous under the Standard. The identity of the resin mixture may be made available as provided in 29 CFR 1910.1200 (I)

<b>SECTION III - PHYSICAL / CHEMICAL CHARACTERISTICS</b>			
Boiling Point	N/A	Specific Gravity	N/A
Vapor Pressure	N/A	Melting Point	N/A
Vapor Density	N/A	Evaporation Rate	N/A
Solubility in Water	Insoluble		

Appearance and Odor: - Natural pre-impregnated Graphite cloth having a mild non-residual odor.



## **MATERIAL SAFETY DATA SHEET**

**E-761 EPOXY GRAPHITE PREPREG**
**Page 2 of 4**

### **SECTION IV - FIRE AND EXPLOSION HAZARD DATA:**

Flash Point (Method Used)	-15 deg. F	(TCC)
Flammable Limits (% volume in air)	LFL 2.6	UFL 12.8
(Acetone)		

Extinguishing Media: - Dry Chemical, Water, Fog

Special Fire Fighting Procedures: - Wear full protective equipment including self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: - N/A

### **SECTION V - REACTIVITY DATA**

Stability	Unstable		Conditions to Avoid:
	Stable	X	Elevated Temperatures will cure.

Incompatibility (Conditions to Avoid): Strong Acids, Bases and Oxidizers - Will Cure

Hazardous Decomposition or By-Products:

Aldehydes, Phenolics, Carbon Mono and/or Dioxides and Oxides of Nitrogen

Hazardous Polymerization: - Will not normally occur.

Conditions to Avoid: - Uncontrolled heat may cause runaway exotherm.

### **SECTION VI - HEALTH HAZARD DATA**

Route(s) of entry: - Inhalation, Skin and Ingestion  
 Prolonged skin exposure can cause moderate irritation and/or dermatitis.  
 Excessive inhalation can cause nasal and/or respiratory irritation, fatigue, weakness, confusion, euphoria, dizziness and headache.  
 Ingestion can cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Carcinogenicity: - No significant carcinogenic or reproductive effects have been observed in animal tests.

Signs and Symptoms of Exposure: - See health hazards section.

Medical Conditions Generally Aggravated by Exposure: - Preexisting dermal, bronchial and respiratory problems.



## **MATERIAL SAFETY DATA SHEET**

**E-761 EPOXY GRAPHITE PREPREG**
*Page 3 of 4*

### **SECTION VI - HEALTH HAZARD DATA (Continued)**

**Emergency and First Aid Procedures:**

**Eyes:** Flush with Water immediately for 15 minutes.  
Call a Physician.

**Skin:** Wash thoroughly with mild soap and water

**Ingestion:** Induce vomiting. Call a Physician.

### **SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE**

**Steps to be taken if Material is Released or Spilled:** - N/A

**Waste Disposal:**

Dispose of in accordance with Local, State and Federal Regulations in an Approved Land Fill.

**Precautions to be Taken in Handling and Storage:**

Keep sealed to avoid absorption of water from humid air  
Keep away from heat. Store under controlled low temperature conditions. Store at 0 deg. F if possible. After low temperature storage, allow package to return to room temperature before opening.

### **SECTION VIII - CONTROL MEASURES:**

**Respiratory Protection (Specify type):**

NIOSH approved respiratory protection.  
N/A with local exhaust.

**Ventilation Required**
**Local Exhaust:**

Recommended when curing

**Special:**

N/A

**Mechanical (General):**  
Recommended

**Protective Gloves:** - Required: Rubber, vinyl or other OSHA approved gloves.

**Eye Protection:** - Eye Safety Glasses

**Other Protective Clothing or Equipment:** - As Required to Prevent Skin Contact.

**Work / Hygienic Practices:** - Wash hands thoroughly after working, and before Eating or drinking.



**MATERIAL SAFETY DATA SHEET****E-761 EPOXY GRAPHITE PREPREG****Page 4 of 4**

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**DISCLAIMER**

The information in this document is believed to be accurate and represents the best information currently available to us. However, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The data in this MSDS relates only to the specific material designated and does not relate to use in combination with any other material or process.

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**MATERIAL SAFETY DATA SHEET****E-765 EPOXY GRAPHITE PREPREG (UD)****Page 1 of 4**

IDENTITY (used on label - list)  E-765 EPOXY GRAPHITE PREPREG (UD)	May be used to comply with OSHA Hazard Communication Standard, 29 CFR 1910.1200 Standard must be consulted for specific requirements.
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<b>SECTION I:</b>	
<b>Manufacturer's Name</b>	<b>Emergency Telephone Number</b>
FiberCote Industries, Inc.	(203) 755-1344
<b>Address (No, St, City, St, Zip)</b>	<b>Information Telephone Number</b>
172 E. Aurora St. Waterbury, CT 06708-2040	(203) 755-1344
<b>Date Prepared - February 2, 1998</b>	<b>Signature of Preparer (Optional)</b>

<b>SECTION II - HAZARDOUS INGREDIENTS / IDENTITY INFORMATION</b>			
<b>Product Ingredients:</b>			<b>%</b>
Graphite Fiber			50 - 75
Proprietary Catalyzed Epoxy Mixture			25 - 50
Residual Organic Solvents			<2
<b>Hazardous Components:</b>	<b>OSHA Pel</b>	<b>ACGIH TIV</b>	<b>%</b>
(Chemical Identity)	8 hr TWA	8 hr TWA	(Optional)
Acetone	750 ppm	750 ppm	<2.0

The catalyzed Epoxy Resin Mixture is a trade secret. One or more of the ingredients of the resin mixture may be considered to be hazardous under the Standard. The identity of the resin mixture may be made available as provided in 29 CFR 1910.1200 (I)

<b>SECTION III - PHYSICAL / CHEMICAL CHARACTERISTICS</b>			
<b>Boiling Point</b>	N/A	<b>Specific Gravity</b>	N/A
<b>Vapor Pressure</b>	N/A	<b>Melting Point</b>	N/A
<b>Vapor Density</b>	N/A	<b>Evaporation Rate</b>	N/A
<b>Solubility in Water</b>	Insoluble		

**Appearance and Odor:** - Pre-impregnated graphite tape having a mild non-residual odor.



**MATERIAL SAFETY DATA SHEET****E-765 EPOXY GRAPHITE PREPREG (UD)****Page 2 of 4****SECTION IV - FIRE AND EXPLOSION HAZARD DATA:**

Flash Point (Method Used)	-15 deg. F	(TCC)
Flammable Limits (% volume in air)	LFL 2.6	UFL 12.8
(Acetone)		
Extinguishing Media:	-	Dry Chemical, Water, Fog
Special Fire Fighting Procedures:	-	Wear full protective equipment including self-contained breathing apparatus.
Unusual Fire and Explosion Hazards:	-	N/A

**SECTION V - REACTIVITY DATA**

Stability	Unstable	Conditions to Avoid:
	Stable	X Elevated Temperatures will cure.
Incompatibility (Conditions to Avoid):	Strong Acids, Bases and Oxidizers	
Hazardous Decomposition or By-Products:	Aldehydes, Phenolics, Carbon Mono and/or Dioxides and Oxides of Nitrogen	
Hazardous Polymerization:	-	Will not normally occur.
Conditions to Avoid:	-	Uncontrolled heat may cause runaway exotherm.

**SECTION VI - HEALTH HAZARD DATA**

Route(s) of entry:	-	Skin and Ingestion Prolonged skin exposure can cause moderate irritation and/or dermatitis. Ingestion can cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Carcinogenicity:	-	No significant carcinogenic or reproductive effects have been observed in animal tests.
Signs and Symptoms of Exposure:	-	See health hazards section.
Medical Conditions Generally Aggravated by Exposure:	-	Preexisting dermal problems.



# **MATERIAL SAFETY DATA SHEET**

**E-765 EPOXY GRAPHITE PREPREG (UD)**

Page 3 of 4

**SECTION VI - HEALTH HAZARD DATA (Continued)**
**Emergency and First Aid Procedures:**

 Eyes: Flush with Water immediately for 15 minutes.  
 Call a Physician.

Skin: Wash thoroughly with mild soap and water

Ingestion: Induce vomiting. Call a Physician.

**SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE**

Steps to be taken if Material is Released or Spilled: - N/A

**Waste Disposal:**

 Dispose of in accordance with Local, State and Federal  
 Regulations in an Approved Land Fill.

**Precautions to be Taken in Handling and Storage:**

 Keep sealed to avoid absorption of water from humid air  
 Keep away from heat.

**SECTION VIII - CONTROL MEASURES:**
**Respiratory Protection (Specify type):**

Ventilation Required

Local Exhaust:

Recommended when curing

Special:

N/A

Mechanical (General):

Recommended

Protective Gloves:

-

Required: Rubber, vinyl or other OSHA approved gloves.

Eye Protection:

-

Eye Safety Glasses

Other Protective Clothing or Equipment:

-

As Required to Prevent Skin Contact.

Work / Hygienic Practices:

-

 Wash hands thoroughly after working, and before  
 Eating or drinking.



**MATERIAL SAFETY DATA SHEET****E-765 EPOXY GRAPHITE PREPREG (UD)****Page 4 of 4****DISCLAIMER**

The information in this document is believed to be accurate and represents the best information currently available to us. However, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The data in this MSDS relates only to the specific material designated and does not relate to use in combination with any other material or process.

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**SPECIAL COMMENTS:**

All components of the E-765 Epoxy Resin prepreg are listed on the TSCA inventory.



# M A T E R I A L   S A F E T Y   D A T A   S H E E T

**RANDOLPH PRODUCTS COMPANY**  
**701 12TH STREET/ PO BOX 830**  
**CARLSTADT, NJ 07072-0830**

**INFORMATION TELEPHONE NO.: 201-438-3700**  
**EMERGENCY TELEPHONE NO.: 800-255-3924**

**PREPARATION DATE: 03/10/99**

**REPLACES DATE: 10/02/98**

**PREPARER: SU**

## SECTION I - PRODUCT IDENTIFICATION

**TYPE II GREEN COMP A MIL-P-23377 EPOXY-POLYAMIDE PRIMER**  
**PRIMER EPOXY GREEN /BUTAL**  
**233772-----**

## SECTION II - HAZARDOUS INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WT. PERCENT IS LESS THAN	OCCUPATIONAL EXPOSURE LIMITS		SKIN DESIG- NATION	VAPOR PRESSURE mmHg 20C	KNOWN OR SUSPECTED CARCINOGEN	SI
			(TLV-TWA)	(TLV-STEL)				
FORMALDEHYDE	50-00-0	0.1%	1 PPM	2 PPM	NO	0.0	YES	Y2
CHROMIUM	7440-47-3	10%	0.05 mg/m3	NO INFO	NO	0.0	YES	Y2
CHROMIUM CHROMATE	7718-08-2	15%	.05 mg/m3	NOT ESTABL.	NO	0.0	YES	Y2
ETHYLENE GLYCOL MONOBUTYL ETHER	111-76-2	5%	25 PPM SKIN	NOT ESTABL.	YES	0.6	NO	Y2
METHYL ETHYL KETONE	78-93-3	30%	200 PPM	300 PPM	NO	70.0	NO	Y2
GLYCOL ETHER	107-98-2	5%	100 PPM	150 PPM	NO	10.9	NO	Y2
TOLUENE	108-88-3	.98%	50 PPM	150 PPM	NO	22.6	NO	Y2
PETROLEUM DISTILLATE (NAPHA)	64742-89-6	5%	300 PPM	400 PPM	NO	26.0	NO	2
XYLENES	1330-20-7	.71%	100 PPM	150 PPM	NO	10.0	NO	Y2

THIS PRODUCT CONTAINS ONE OR MORE MATERIALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION  
 313 OF THE EMERGENCY PLANNING AND THE COMMUNITY RIGHT-TO-KNOW ACTS OF 1986 AND OF 40 CFR 372.

N.A. - NOT APPLICABLE

## SECTION III - PHYSICAL DATA

**BOILING RANGE : 172- 343 F**  
**ODOR : TYPICAL SOLVENT**  
**APPEARANCE : THIN GREEN LIQUID**  
**VOLATILE BY WEIGHT: 37.8%**  
**VOLATILE BY VOLUME: 60.0%**

**VAPOR DENSITY : IS HEAVIER THAN AIR**  
**EVAPORATION RATE: IS SLOWER THAN ETHER**  
**SOLUBILITY :**  
**PRODUCT DENSITY : 10.9 LBS./GAL. (US)**

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

**FLAMMABILITY CLASSIFICATION:**

**FLASH POINT: 21 F**  
**(SETAFLASH CLOSED CUP)**

**LEL: 0.9 %**  
**UEL: 12.7 %**

**OSHA - FLAMMABLE LIQUID - CLASS IB**  
**DOT - FLAMMABLE LIQUID OR SOLID**

**EXTINGUISHING MEDIA: CARBON DIOXIDE DRY CHEMICAL FOAM**



233772----- - 03/10/99

PAGE 3

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: AVOID BREATHING SOLVENT VAPOR. ENSURE ADEQUATE VENTILATION. AVOID SPARKS, FLAMES, AND ANYTHING WHICH COULD CAUSE FIRE. ELIMINATE SOURCE OF SPILL IF YOU CAN DO SO WITHOUT RISK BY CLOSING VALVE, PLUGGING HOLE, ETC. APPLY ABSORBENT INERT MATERIAL (SAND, DUST, VERMICULITE) TO SPILL. CLEAN SPILL WITH BRISTLE BROOMS. NON-SPARKING TOOLS, CLEAN DRY RAGS. PROTECTIVE CLOTHING SHOULD BE WORN.

WASTE DISPOSAL METHOD: SOAK LIQUIDS WITH SAWDUST OR RAGS AND REMOVE. FLUSH WITH WATER IF POSSIBLE. AVOID SKIN CONTACT. DISPOSAL SHOULD BE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. DO NOT INCINERATE, CUT OR WELD EMPTY CONTAINERS. WHEN DISCARDED THIS MATERIAL IS A HAZARDOUS WASTE. TRANSFER LIQUID TO CONTAINERS FOR RECOVERY OR DISPOSAL. EPA HAZARDOUS WASTE CODE F003 HAZARDOUS WASTE CHARACTERISTICS. IGNITABILITY.

## SECTION VIII - SAFE HANDLING AND USE INFORMATION

RESPIRATORY PROTECTION: NIOSH/OSHA APPROVED RESPIRATOR TYPES SUITABLE FOR MATERIALS IN SECTION II RECOMMENDED. APPROVED CHEMICAL/MECHANICAL FILTERS RECOMMENDED WHEN VENTILATION IS RESTRICTED. PRECAUTIONS MUST BE TAKEN SO THAT PERSONS DO NOT BREATHE THE VAPORS OR HAVE CONTACT WITH EYES OR SKIN. PROTECT AGAINST EXPOSURE TO BOTH VAPOR AND SPRAY MIST.

VENTILATION: SUFFICIENT VENTILATION, IN VOLUME AND PATTERN, SHOULD BE PROVIDED TO KEEP AIR CONTAMINATION BELOW CURRENT APPLICABLE OSHA PERMISSIBLE EXPOSURE LIMIT OR ACGIH'S TLV LIMIT. SOLVENT VAPORS SHOULD BE REMOVED FROM LOWER LEVELS OF WORK AREA AND IGNITION SOURCES SHOULD BE ELIMINATED.

PROTECTIVE GLOVES: WEAR PROTECTIVE GLOVES AND GOGGLES.

EYE PROTECTION: CHEMICAL GOGGLES WITH SIDE SHIELDS OR FACE SHIELD RECOMMENDED.

OTHER PROTECTIVE EQUIPMENT: USE PROTECTIVE CREAMS WHERE SKIN CONTACT IS LIKELY. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE.

HYGIENIC PRACTICES: USE NORMAL HYGIENE PRACTICES DURING AND AFTER HANDLING THIS MATERIAL.

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: DRUMS SHOULD BE GROUNDED WHEN BEING EMPTIED.

OTHER PRECAUTIONS: PROVIDE RESPIRATORY PROTECTION AGAINST FUMES GENERATED DURING BURNING.

## SECTION X - HMIS RATINGS

HEALTH: 3

FLAMMABILITY: 3

REACTIVITY: 0

PERSONAL PROTECTION: I

THE INFORMATION CONTAINED HEREIN IS, TO THE BEST OF OUR KNOWLEDGE AND BELIEF, ACCURATE. HOWEVER, SINCE THE CONDITIONS OF HANDLING AND USE ARE BEYOND OUR CONTROL, WE MAKE NO GUARANTEE OF RESULTS, AND ASSUME NO LIABILITY FOR DAMAGES INCURRED BY USE OF THIS MATERIAL. IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.

\*\*\*\*\* PAGE 99001 \*\*\*\*\* FORM 00169 \*\*\*\*\*



# M A T E R I A L   S A F E T Y   D A T A   S H E E T

RANDOLPH PRODUCTS COMPANY  
701 12TH STREET/ PO BOX 830  
CARLSTADT, NJ 07072-0830

INFORMATION TELEPHONE NO.: 201-438-3700  
EMERGENCY TELEPHONE NO.: 800-255-3924

PREPARATION DATE: 03/10/99

REPLACES DATE: 10/02/98

PREPARER: SU

## SECTION I - PRODUCT IDENTIFICATION

TYPE II GREEN COMP A MIL-P-23377 EPOXY-POLYAMIDE PRIMER  
PRIMER EPOXY GREEN /METAL  
233772-----

## SECTION II - HAZARDOUS INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WT. PERCENT IN LESS THAN	OCCUPATIONAL EXPOSURE LIMITS		SKIN DESIG- NATION	VAPOR PRESSURE mmHg 20C	KNOWN OR SUSPECTED CARCINOGEN	SEC 312
			(TLV-TWA)	(TLV-STEL)				
FORMALDEHYDE	50-00-0	0.1%	1 PPM	2 PPM	NO	0.0	YES	YES
CHROMIUM	7440-47-3	10%	0.05 mg/m3	NO INFO	NO	0.0	YES	YES
STRONTIUM CHROMATE	7789-06-2	15%	.05 mg/m3	NOT ESTABL.	NO	0.0	YES	YES
ETHYLENE GLYCOL MONOMETHYL ETHER	111-76-2	5%	25 PPM SKIN	NOT ESTABL.	YES	0.6	NO	YES
METHYL STYL KETONE	78-93-3	20%	200 PPM	300 PPM	NO	70.0	NO	YES
GLYCOL ETHER	107-98-2	5%	100 PPM	150 PPM	NO	10.9	NO	YES
UREA	108-88-3	.90%	50 PPM	150 PPM	NO	22.0	NO	YES
PETROLEUM DISTILLATE (NAPHTA)	64742-89-8	5%	100 PPM	400 PPM	NO	25.0	NO	NO
XYLENES	1330-20-7	.71%	100 PPM	150 PPM	NO	10.0	NO	YES

THIS PRODUCT CONTAINS ONE OR MORE MATERIALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 312 OF THE EMERGENCY PLANNING AND THE COMMUNITY RIGHT-TO-KNOW ACTS OF 1986 AND OF 40 CFR 372.

N.A. - NOT APPLICABLE

## SECTION III - PHYSICAL DATA

BOILING RANGE : 172- 343 F  
ODOR : TYPICAL SOLVENT  
APPEARANCE : THIN GREEN LIQUID  
VOLATILE BY WEIGHT: 37.6%  
VOLATILE BY VOLUME: 60.0%

VAPOR DENSITY : IS HEAVIER THAN AIR  
EVAPORATION RATE: IS SLOWER THAN ETHER

SOLUBILITY :  
PRODUCT DENSITY : 10.9 LBS./GAL. (US)

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION:

FLASH POINT: 21 F  
(SETAFLASH CLOSED CUP)

LEL: 0.9 %  
UEL: 12.7 %

OSHA - FLAMMABLE LIQUID - CLASS IB  
DOT - FLAMMABLE LIQUID OR SOLID

EXTINGUISHING MEDIA: CARBON DIOXIDE DRY CHEMICAL FOAM



233772----- - 03/10/99

PAGE 2

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

UNUSUAL FIRE AND EXPLOSION HAZARDS: KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, AND OPEN FLAME. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. WATER MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. REMOVE ALL NON-ESSENTIAL PERSONNEL FROM FIRE AREA. VAPOR IS HEAVIER THAN AIR AND CAN TRAVEL CONSIDERABLE DISTANCES TO A SOURCE OF IGNITION AND FLASHBACK.

SPECIAL FIREFIGHTING PROCEDURES: WATER STREAM WILL SPREAD FIRE. DO NOT USE WATER HOSE STREAM. FULL BUNKER GEAR IN FIRE AREA (HELMET WITH FACE SHIELD, BUNKER COAT, GLOVES, RUBBER BOOTS)

## SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVER EXPOSURE: CHRONIC HEALTH EFFECTS ARE POSSIBLE FROM LONG TERM EXPOSURE TO THIS MATERIAL, INCLUDING DRYING, CRACKING AND IRRITATION OF THE SKIN. REACTS WITH SKIN PROTEIN AND MOISTURE AND CAN CAUSE RASH, SCALING OR BLISTERING. HIGH CONCENTRATIONS MAY CAUSE HEADACHES AND DIZZINESS, ARE ANESTHETIC, AND MAY HAVE OTHER CENTRAL NERVOUS SYSTEM EFFECTS, INCLUDING DEATH. ABUSE OF TOLUENE VAPORS CLEARLY INDICATE THAT TOLUENE IS A DEVELOPMENTAL TOXICANT IT IS KNOWN IN THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: PRE-EXISTING SENSITIVITY TO SOLVENTS CAN CAUSE A HEIGHTENED REACTION TO EXPOSURE TO THIS PRODUCT. CONTACT LENS WEARERS SHOULD CONSULT PROVIDER BEFORE HANDLING - CONSULT PHYSICIAN IMMEDIATELY IF THERE IS EYE CONTACT

PRIMARY ROUTE(S) OF ENTRY: DERMAL INHALATION

EMERGENCY AND FIRST AID PROCEDURES: INHALATION: REMOVE TO FRESH AIR, RESTORE BREATHING. CONSULT A PHYSICIAN. SKIN CONTACT: FLUSH WITH WATER. EYE CONTACT: FLUSH IMMEDIATELY WITH LARGE AMOUNTS OF WATER. CONSULT A PHYSICIAN. DO NOT INDUCE VOMITING. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION. SMALL AMOUNTS OF THE LIQUID ASPIRATED INTO THE RESPIRATORY SYSTEM DURING INGESTION, OR FROM VOMITING, MAY CAUSE CHEMICAL PNEUMONIA OR PULMONARY EDEMA.

## SECTION VI - REACTIVITY DATA

STABILITY: THIS PRODUCT IS STABLE UNDER NORMAL STORAGE CONDITIONS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR UNDER NORMAL CONDITIONS.

HAZARDOUS DECOMPOSITION PRODUCTS: THERMAL DECOMPOSITION RELEASES CARBON MONOXIDE AND/OR CARBON DIOXIDE.

CONDITIONS TO AVOID: AVOID STRONG OXIDIZERS, ACIDS AND ALKALIES.

INCOMPATABILITY: NONE KNOWN.



11-07-2000

PIASECKI AIRCRAFT CORP.  
PIASECKI AIRCRAFT CORP.  
WEST TERMINUS SECOND ST.  
ESSINGTON, PA 740209803  
US

0007859FRPPSD43

PF-7035

SUBJECT: Material Safety Data Sheet

Dear MSDS Coordinator,

Enclosed, find the Material Safety Data Sheet(s) (MSDS) for the requested product(s). We have reviewed our products, conducted a hazard determination, and prepared MSDSs in compliance with the requirements of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS). Our MSDSs also provide information on any toxic chemical subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA).

If this product, or any component of it, is considered to be hazardous or carcinogenic under the OSHA Hazard Communication Standard or the WHMIS regulations, information is provided in Section 2: COMPOSITION/INFORMATION ON INGREDIENTS or in Section 3: HAZARDS IDENTIFICATION.

You have received the MSDS because

1. You have ordered the products for the first time, or
2. Your company reordered products where the MSDS has changed since you last ordered, or
3. You requested the MSDS.

If you have any questions, please contact your Sales Representative.

Sincerely yours,

Global Regulatory



PF7035 C

## MATERIAL SAFETY DATA SHEET

## SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

## COMPANY INFORMATION

Fiber Resin Corporation  
H.B. Fuller Company Subsidiary  
20701 Nordhoff Street  
Chatsworth, CA 91311  
Phone: 818-882-3022  
Fax: 818-709-0399

## MSDS INFORMATION

Preparation Date: 18 December 1998  
Supersedes: 25 April 1995  
Prepared By: Industrial Hygiene  
Phone Number: 651-236-5842

Medical Emergency Phone Number: 1-888-853-1758  
Transport Emergency Phone Number (CHEMTREC): 1-800-424-9300

## PRODUCT INFORMATION

Product Name/Number: PF-7035 C, FR-7035 F/K, WWMAT .055-.065 PSF, 48"

## SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

This Material Safety Data Sheet is prepared to comply with the United States Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Workplace Hazardous Materials Information System (WHMIS). Unlisted ingredients are not 'hazardous' per the OSHA standard and/or are not found on the WHMIS ingredient disclosure list.

Chemical/CAS Number	Percent	OSHA PEL	ACGIH TLV
Bisphenol A diglycidyl ether (1675-54-3) LD50: 11 gm/kg (oral, rat)	10-30% LC50: No data found	Not estab.	Not estab.
Diuron (330-54-1) LD50: 1017 mg/kg (oral, rat)	1-5% LC50: No data found	10 mg/M3	10 mg/M3
Epoxy resin	30-50%	Not estab.	Not estab.
Resorcinol diglycidyl ether (101-90-6) LD50: 2570 mg/kg (oral, rat)	1-5% LC50: No data found	Not estab.	Not estab.

See Section 16 for additional information.

## SECTION 3: HAZARDS IDENTIFICATION

## EMERGENCY OVERVIEW

Vapors/fumes may be irritating at application temperatures.  
Potential skin sensitizer

## POTENTIAL HEALTH EFFECTS

Eyes: Vapors and fumes released at or above application temperatures may cause irritation.

Skin: Epoxy resins are potential skin sensitizers.

Inhalation: Vapors and fumes may cause irritation of the nose, throat and respiratory tract. Overexposure may cause headaches and dizziness.



Ingestion: Not an anticipated route of exposure. Harmful if swallowed.

Chronic: No anticipated chronic effects.

REGULATED CARCINOGEN STATUS: Unless noted below, this product does not contain regulated levels of NTP, IARC, ACGIH or OSHA listed carcinogens.

Resorcinol diglycidyl ether is listed as a potential carcinogen by NTP and IARC.

Existing Health Conditions Affected by Exposure: No known effects on other illnesses.

#### SECTION 4: FIRST AID MEASURES

If in eye: Flush immediately with water for 15 minutes. Consult a physician if irritation persists.

If on skin: Wash affected area with soap and water. Launder contaminated clothing before reuse.

If vapors inhaled: Remove subject to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician if symptoms persist.

If ingested: If person can swallow, give one glass of water or milk. Do not induce vomiting. Get immediate medical attention. Never give anything by mouth to an unconscious person.

#### SECTION 5: FIRE FIGHTING MEASURES

Flash Point/Method: > 200 degrees F Cleveland Closed Cup (93 C)

Upper Explosive Limit/Lower Explosive Limit: Not applicable

Autoignition Temperature: Not applicable

Appropriate Extinguishers: Use water spray, foam, dry chemical or carbon dioxide.

Special Fire Fighting Procedures: Persons exposed to products of combustion should wear self-contained breathing apparatus and full protective equipment.

Unusual Fire and Explosion Hazards: None known.

Hazardous Combustion Product: Incomplete combustion can yield low molecular weight hydrocarbons, carbon monoxide, hydrogen chloride, phosgene, nitrogen compounds

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Not anticipated to occur as supplied.

#### SECTION 7: HANDLING AND STORAGE

##### HANDLING INFORMATION

Wear appropriate protective equipment when working with this product.

##### STORAGE INFORMATION



Consult the Technical Data Sheet for specific storage instructions.

#### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection: Safety glasses.

Skin Protection: Prevent contact by using rubber gloves and appropriate protective clothing. Launder contaminated clothing before reuse.

Respiratory Protection: Not normally required. Use NIOSH/MSHA approved respirator if conditions warrant.

Ventilation: General dilution ventilation.

#### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid at 77F
Color:	Characteristic color
Odor:	Characteristic odor
Odor Threshold:	Not established
Weight per Gallon:	Not applicable
Specific Gravity:	Not established
% Solids by Weight:	Not established
pH:	Not applicable (as supplied)
Boiling Range:	Not applicable (as supplied)
Freezing/Melting Point:	Not applicable
Vapor Pressure:	Not established
Vapor Density:	Not applicable
Evaporation Rate:	Not applicable
Water/Oil Partition Coefficient:	Not established

VOC: Not established

#### SECTION 10: STABILITY AND REACTIVITY DATA

Stability: Stable

Incompatibility: Not established

Hazardous Decomposition:  
Nitrogen compounds  
Hydrogen chloride, phosgene

Hazardous Polymerization: Will not occur

#### SECTION 11: TOXICOLOGICAL INFORMATION

No data available

#### SECTION 12: ECOLOGICAL INFORMATION

No data available

#### SECTION 13: DISPOSAL CONSIDERATIONS

To the best of our knowledge, this product does not meet the definition of hazardous waste under the U.S. EPA Hazardous Waste Regulations 40 CFR 261. Disposal via incineration at an approved facility is recommended. Consult state, local or provincial authorities for more restrictive requirements.

#### SECTION 14: TRANSPORTATION INFORMATION



## UNITED STATES DEPARTMENT OF TRANSPORTATION (DOT)

DOT Proper Shipping Name: Carbon dioxide, solid (Material packed in dry ice)  
DOT Hazard Class/I.D. Code: 9, UN1845  
DOT Label: Misc 9  
DOT Packaging Group: III

It is our opinion that the information provided here may be used to transport this product in compliance with Canadian Transportation of Dangerous Goods.

## SECTION 15: REGULATORY INFORMATION

## FEDERAL

## Toxic Substances Control Act (TSCA)

## Section 4 - Test Rule

This product contains a chemical substance that is subject to a Section 4 Test Rule.

Contact the company TSCA Compliance Manager at 651/236-5858 for the identity of the Section 4 chemical(s).

## Section 8(b) - Inventory Status

This product is in compliance with the Toxic Substances Control Act's Inventory requirements.

## Section 12(b) - Export Notice Requirements

This product contains a chemical substance that is currently on the EPA's Section 12(b) Export List. Within seven days of entering into a contract to export and certainly no later than the day of export, the agent of export must notify the EPA of their intent.

Contact the company TSCA Compliance Manager at 651/236-5858 for the identity of the Section 12(b) chemical(s).

## SARA TITLE III

Section 313: This product contains the following toxic chemical(s) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR part 372:

Chemical Name	CAS Number	Percent
Diglycidyl resorcinol ether	101-90-6	1-5%
Diuron	330-54-1	1-5%

## STATE REGULATIONS

California Proposition 65: This product contains chemical(s) known to the state of California to cause cancer (c) or reproductive (r) damage.

<0.0009% Acrylonitrile (c) 107-13-1  
listed July 1, 1987



<0.0042% Benzene (c)	71-43-2
listed February 27, 1987	
<0.0001% Epichlorohydrin (c) (r)	106-89-8
listed October 1, 1987	
<1.5195% Diglycidyl resorcinol ether (c)	101-90-6
listed July 1, 1989	
<0.0082% 4-Vinylcyclohexene (c)	100-40-3
listed May 1, 1996	

WHMIS IDENTIFICATION/OTHER INTERNATIONAL REGULATIONS

d2b

SECTION 16: ADDITIONAL INFORMATION

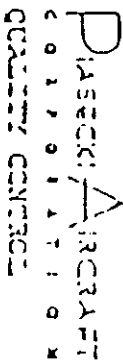
HMIS RATING

Health-2            Flammability-1            Reactivity-0

See SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for personal protective equipment recommendations.

The information and recommendations set forth herein are believed to be accurate. Because some of the information is derived from information provided to Fiber Resin Corporation from its suppliers, and because Fiber Resin Corporation has no control over the conditions of handling and use, Fiber Resin Corporation makes no warranty, expressed or implied, regarding the accuracy of the data or the results to be obtained from the use thereof. The information is supplied solely for your information and consideration, and Fiber Resin Corporation assumes no responsibility for use or reliance thereon. It is the responsibility of the user of Fiber Resin Corporation products to comply with all applicable federal, state and local laws and regulations.





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3. C. No. 64475

Case No. \_\_\_\_\_

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Case: FED EX

DATE	DESCRIPTION	AMOUNT	CHECK NO.	BANK
10/1/20	DEPOSIT	100.00		WELLS FARGO
10/5/20	PAYROLL	50.00	101	WELLS FARGO
10/10/20	RENT	25.00	102	WELLS FARGO
10/15/20	UTILITIES	15.00	103	WELLS FARGO
10/20/20	SALES	75.00	104	WELLS FARGO
10/25/20	INVENTORY	30.00	105	WELLS FARGO
10/30/20	ADVERTISING	20.00	106	WELLS FARGO
11/5/20	DEPOSIT	120.00		WELLS FARGO
11/10/20	PAYROLL	55.00	107	WELLS FARGO
11/15/20	RENT	25.00	108	WELLS FARGO
11/20/20	UTILITIES	15.00	109	WELLS FARGO
11/25/20	SALES	80.00	110	WELLS FARGO
11/30/20	INVENTORY	35.00	111	WELLS FARGO
12/5/20	ADVERTISING	25.00	112	WELLS FARGO
12/10/20	DEPOSIT	130.00		WELLS FARGO
12/15/20	PAYROLL	60.00	113	WELLS FARGO
12/20/20	RENT	25.00	114	WELLS FARGO
12/25/20	UTILITIES	15.00	115	WELLS FARGO
12/30/20	SALES	85.00	116	WELLS FARGO
1/5/21	INVENTORY	40.00	117	WELLS FARGO
1/10/21	ADVERTISING	30.00	118	WELLS FARGO
1/15/21	DEPOSIT	140.00		WELLS FARGO
1/20/21	PAYROLL	65.00	119	WELLS FARGO
1/25/21	RENT	25.00	120	WELLS FARGO
1/30/21	UTILITIES	15.00	121	WELLS FARGO
2/5/21	SALES	90.00	122	WELLS FARGO
2/10/21	INVENTORY	45.00	123	WELLS FARGO
2/15/21	ADVERTISING	35.00	124	WELLS FARGO
2/20/21	DEPOSIT	150.00		WELLS FARGO
2/25/21	PAYROLL	70.00	125	WELLS FARGO
2/28/21	RENT	25.00	126	WELLS FARGO
3/5/21	UTILITIES	15.00	127	WELLS FARGO
3/10/21	SALES	95.00	128	WELLS FARGO
3/15/21	INVENTORY	50.00	129	WELLS FARGO
3/20/21	ADVERTISING	40.00	130	WELLS FARGO
3/25/21	DEPOSIT	160.00		WELLS FARGO
3/30/21	PAYROLL	75.00	131	WELLS FARGO
4/5/21	RENT	25.00	132	WELLS FARGO
4/10/21	UTILITIES	15.00	133	WELLS FARGO
4/15/21	SALES	100.00	134	WELLS FARGO
4/20/21	INVENTORY	55.00	135	WELLS FARGO
4/25/21	ADVERTISING	45.00	136	WELLS FARGO
4/30/21	DEPOSIT	170.00		WELLS FARGO
5/5/21	PAYROLL	80.00	137	WELLS FARGO
5/10/21	RENT	25.00	138	WELLS FARGO
5/15/21	UTILITIES	15.00	139	WELLS FARGO
5/20/21	SALES	105.00	140	WELLS FARGO
5/25/21	INVENTORY	60.00	141	WELLS FARGO
5/30/21	ADVERTISING	50.00	142	WELLS FARGO
6/5/21	DEPOSIT	180.00		WELLS FARGO
6/10/21	PAYROLL	85.00	143	WELLS FARGO
6/15/21	RENT	25.00	144	WELLS FARGO
6/20/21	UTILITIES	15.00	145	WELLS FARGO
6/25/21	SALES	110.00	146	WELLS FARGO
6/30/21	INVENTORY	65.00	147	WELLS FARGO
7/5/21	ADVERTISING	55.00	148	WELLS FARGO
7/10/21	DEPOSIT	190.00		WELLS FARGO
7/15/21	PAYROLL	90.00	149	WELLS FARGO
7/20/21	RENT	25.00	150	WELLS FARGO
7/25/21	UTILITIES	15.00	151	WELLS FARGO
7/30/21	SALES	115.00	152	WELLS FARGO
8/5/21	INVENTORY	70.00	153	WELLS FARGO
8/10/21	ADVERTISING	60.00	154	WELLS FARGO
8/15/21	DEPOSIT	200.00		WELLS FARGO
8/20/21	PAYROLL	95.00	155	WELLS FARGO
8/25/21	RENT	25.00	156	WELLS FARGO
8/30/21	UTILITIES	15.00	157	WELLS FARGO
9/5/21	SALES	1		

REC'D 11/15/13 3PM PO#1

OFFICIAL ANSWERS

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CERTIFICATIONS HAVE

BBBN RECEIVED

		V.L. Stephens	
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DELIVER TO: CRUIER

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Company	Government Inspector:
Insd:	Date:

*[Signature]*

FORM QC-114

## MASSACHUSETTS RECEIPT




**SECTION I**  
 PRODUCT IDENTIFICATION


# MATERIAL SAFETY DATA SHEET

SHERWIN-WILLIAMS  
 DIVERSIFIED BRANDS, INC.  
 KRYLON/SPRAYON INDUSTRIAL PRODUCTS  
 31500 SOLON ROAD  
 SOLON, OH 44138

EMERGENCY TELEPHONE NO.  
 (216) 566-2617

DATE OF PREPARATION  
 17 - Aug - 98

INFORMATION TELEPHONE NO.  
 (800) 777-2988 SPRAYON INDUSTRIAL  
 (800) 247-3266 KRYLON INDUSTRIAL

©1998 Sherwin-Williams Co.

## Industrial Maintenance

PR

SECTION II		ACOSH TLV <STEL>	OSHA PEL <STEL>	Units	Vapor Pressure (mm Hg)	All Purpose Paints	All Purpose V.P.	All Purpose Flick	Ruddy Brown	All Purpose Gray	All Purpose Ruddy Brown	All Purpose Gray
74-86-4	Propene		1000	PPM	760.0	17	16	16	16	17	16	16
64742-89-8	V. M. S. P. Naphtha	300	300 <1000>	PPM	12.0	4	4	5	3	4	3	3
106-86-3	Toluene	50	100 <150>	PPM (Skin)	22.0	23	23	25	27	26	27	26
75-83-7	2-Methyl-1-propanol	50	50	PPM	8.7	2	2	2	2		2	2
67-84-1	Acetone	750	750 <1000>	PPM	180.0	33	33	33	33	33	33	33
14807-96-6	Talc	2	2	Mg/MO	as Resp. Dust	7	7	7	7	8	7	7
13463-87-7	Titanium Dioxide	10	10(S)		as Resp. Dust	8	8					1
Weight per Gallon (lbs.)						8.89	8.90	8.73	8.79	8.80	8.79	8.73
VOC as a percent by weight per SAACMO Rule 49						48.4	48.3	49.0	48.6	48.2	48.6	48.2
VOC (Volatile Organic Compounds) Total - lbs./gal						3.18	3.18	3.90	3.28	3.31	3.28	3.27
HM S (HPPA) Rating (health - flammability - reactivity)						2 4 0	2 4 0	2 4 0	2 4 0	2 4 0	2 4 0	2 4 0

<sup>5</sup> Ingredient subject to the reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313 40 CFR 372.65 C







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P. O. Prepared 4-Jan-00

**YES**

**Essington, PA. 19029**

M:\50\FORMS\64623-04Jan00-ReitLubricant



**WARMINSTER OFFICE:**

9 Mearns Road, Warminster, PA 18974  
 (610) 674-1000 Fax: (610) 674-8860  
 (610) 674-1808

# REIT

**LUBRICANTS**
**NOTTINGHAM OFFICE**

15 Sylmar Road, Nottingham, PA 19360  
 (610) 932-2200 Fax: (610) 932-9333  
 800-423-362

01/08/01

01/10/01

64623

00055933-00

610-521-5700

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PIASECKI AIRCRAFT CORP.  
 W. TERMINUS OF SECOND ST.  
 ESSINGTON  
 PA 19029

PIASECKI AIRCRAFT CORP.  
 W. TERMINUS OF SECOND ST.  
 ESSINGTON  
 PA 19029

**TERMS:** NET 30 DAYS

**S.O. NUMBER:** 669028-00

OUR TRUCK

10

WARMINSTER/HOUSE

10

WARMINSTER

**TAX EXEMPT NO:** MANUFACTURING

10 PA BUSINESS

MODEL HVYD

1.0 55 GAL DRUM

1.0

1

MOBIL DTE HEAVY 55 GAL

#28K563

MODEL TD

1.0 55 GAL DRUM

1.0

1

MOBIL DTE LIGHT 55 GAL

#28J157

7 DRUMS

1.0 EACH

1.0

SUBTOTAL

6

**\*\*ORDER\*\***
**SIGNED:** *Joseph A. Trucking* **PRINT:** JOSEPH A. TRUCKING

**COMPLIANCE WITH OSHA'S HAZARD COMMUNICATION STANDARD REGULATIONS, A MATERIAL SAFETY DATA SHEET (MSDS) IS AVAILABLE UPON REQUEST AT OUR OFFICE.**
**Amounts remaining unpaid 30 (thirty) days after billing date are subject to a FINANCE CHARGE of 1-1/2% per month. (ANNUAL PERCENTAGE RATE 18%).**
**FINANCE CHARGE will be computed monthly on the outstanding unpaid balance over 30 days old after crediting current payments.**
**CUSTOMER PACKING LIST**

1-11-01



# MATERIAL SAFETY DATA BULLETIN

## MOBIL DTE OIL LIGHT

### 1. PRODUCT AND COMPANY IDENTIFICATION

APPROVAL DATE: 04/15/98

PRODUCT NAME: MOBIL DTE OIL LIGHT  
SUPPLIER: MOBIL OIL CORP.  
NORTH AMERICA MARKETING AND REFINING  
3225 GALLOWS RD.  
FAIRFAX, VA 22037

24 - Hour Emergency (call collect): 609-737-4411  
Product and MSDS Information: 800-662-4525 609-224-4644  
CHEMTREC: 800-424-9300 202-483-7616

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAMES AND SYNONYMS: PET. HYDROCARBONS AND ADDITIVES

INGREDIENTS CONSIDERED HAZARDOUS TO HEALTH:

This product is not formulated to contain ingredients which have exposure limits established by U.S. agencies. It is not hazardous to health as defined by the European Union Dangerous Substances/Preparations Directives. See Section 15 for a regulatory analysis of the ingredients.

See Section 15 for European Label Information.

See Section 8 for exposure limits (if applicable).

### 3. HAZARDS IDENTIFICATION

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined not to be hazardous.

EFFECTS OF OVEREXPOSURE: No significant effects expected.

EMERGENCY RESPONSE DATA: Light Amber Liquid. DOT ERG No. - NA

### 4. FIRST AID MEASURES

EYE CONTACT: Flush thoroughly with water. If irritation occurs, call a physician.

SKIN CONTACT: Wash contact areas with soap and water.

INHALATION: Not expected to be a problem.

INGESTION: Not expected to be a problem. However, if greater than 1/2 liter (pint) ingested, seek medical attention.



## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**VENTILATION:** No special requirements under ordinary conditions of use and with adequate ventilation.

**RESPIRATORY PROTECTION:** No special requirements under ordinary conditions of use and with adequate ventilation.

**EYE PROTECTION:** Normal industrial eye protection practices should be employed.

**SKIN PROTECTION:** No special equipment required. However, good personal hygiene practices should always be followed.

**EXPOSURE LIMITS:** This product does not contain any components which have recognized exposure limits. However, a exposure limit of 5.00 mg/m3 is suggested for oil mist.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Typical physical properties are given below. Consult Product Data Sheet for specific details.

**APPEARANCE:** Liquid

**COLOR:** Light Amber

**ODOR:** Mild

**ODOR THRESHOLD-ppm:** NE

**pH:** NA

**BOILING POINT C(F):** > 316(600)

**MELTING POINT C(F):** NA

**FLASH POINT C(F):** > 207(405) (ASTM D-92)

**FLAMMABILITY:** NE

**AUTO FLAMMABILITY:** NE

**EXPLOSIVE PROPERTIES:** NA

**OXIDIZING PROPERTIES:** NA

**VAPOR PRESSURE-mmHg 20 C:** < 0.1

**VAPOR DENSITY:** > 2.0

**EVAPORATION RATE:** NE

**RELATIVE DENSITY, 15/4 C:** 0.87

**SOLUBILITY IN WATER:** Negligible

**PARTITION COEFFICIENT:** > 3.5

**VISCOSITY AT 40 C, cSt:** > 28.8

**VISCOSITY AT 100 C, cSt:** 5.1

**POUR POINT C(F):** -7(20)

**FREEZING POINT C(F):** NE

**VOLATILE ORGANIC COMPOUND:** NA

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER TECHNICAL INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE



## 11. TOXICOLOGICAL DATA

### ---ACUTE TOXICOLOGY---

ORAL TOXICITY (RATS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.

DERMAL TOXICITY (RABBITS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.

INHALATION TOXICITY (RATS): Not applicable ---Harmful concentrations of mists and/or vapors are unlikely to be encountered through any customary or reasonably foreseeable handling, use, or misuse of this product.

EYE IRRITATION (RABBITS): Practically non-irritating. (Draize score: 0 or greater but 6 or less). ---Based on testing of similar products and/or the components.

SKIN IRRITATION (RABBITS): Practically non-irritating. (Primary Irritation Index: 0.5 or less). ---Based on testing of similar products and/or the components.

OTHER ACUTE TOXICITY DATA: The acute toxicological results summarized above are based on testing of representative Mobil products. Representative Mobil formulations have shown no acute effects, administered via the inhalation route, when tested at maximum attainable oil mist or vapor concentrations.

### ---SUBCHRONIC TOXICOLOGY (SUMMARY)---

Representative Mobil formulations have been tested at the Mobil Environmental and Health Sciences Laboratory by dermal applications to rats 5 days/week for 90 days at doses significantly higher than those expected during normal industrial exposure. Extensive evaluations, including microscopic examination of internal organs and clinical chemistry of body fluids, showed no adverse effects.

### ---REPRODUCTIVE TOXICOLOGY (SUMMARY)---

Dermal exposure of pregnant rats to representative formulations did not cause adverse effects in either the mothers or their offspring.

### ---CHRONIC TOXICOLOGY (SUMMARY)---

The base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of severely treated oils showed no evidence of carcinogenic effects. These results are confirmed on a continuing basis using various screening methods such as the Mobil Modified Ames Test and IP-346.

### ---SENSITIZATION (SUMMARY)---

Representative Mobil formulations have not caused skin sensitization in guinea pigs.



## 15. REGULATORY INFORMATION

Governmental Inventory Status: All components comply with TSCA and DSL.

EU Labeling: EU labeling not required.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III:  
This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

This product contains no chemicals reportable under  
SARA (313) toxic release program.

THIS PRODUCT HAS BEEN AUTHORIZED BY USDA FOR USE UNDER THE FOLLOWING  
CATEGORY: H2 - Lubricants With No Food Contact

The following product ingredients are cited on the lists below:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
TRICRESYL PHOSPHATE (0.05%)	1330-78-5	22
PHOSPHORODITHOIC ACID, O,O-DI	68649-42-3	22
C1-14-ALKYL ESTERS, ZINC SALTS (2: 1) (ZDDP) (0.07%)		

### --- REGULATORY LISTS SEARCHED ---

1=ACGIH ALL	6=IARC 1	11=TSCA 4	16=CA P65 CARC	21=LA RTK
2=ACGIH A1	7=IARC 2A	12=TSCA 5a2	17=CA P65 REPRO	22=MI 293
3=ACGIH A2	8=IARC 2B	13=TSCA 5e	18=CA RTK	23=MN RTK
4=NTP CARC	9=OSHA CARC	14=TSCA 6	19=FL RTK	24=NJ RTK
5=NTP SUS	10=OSHA Z	15=TSCA 12b	20=IL RTK	25=PA RTK
				26=RI RTK

Code key: CARC=Carcinogen; SUS=Suspected Carcinogen; REPRO=Reproductive



# MATERIAL SAFETY DATA BULLETIN

## MOBIL DTE OIL HEAVY

### 1. PRODUCT AND COMPANY IDENTIFICATION

APPROVAL DATE: 04/15/98

PRODUCT NAME: MOBIL DTE OIL HEAVY

SUPPLIER: MOBIL OIL CORP.

NORTH AMERICA MARKETING AND REFINING

3225 GALLOWS RD.

FAIRFAX, VA 22037

24 - Hour Emergency (call collect): 609-737-4411

Product and MSDS Information: 800-662-4525 609-224-4644

CHEMTREC: 800-424-9300 202-483-7616

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAMES AND SYNONYMS: PET. HYDROCARBONS AND ADDITIVES

INGREDIENTS CONSIDERED HAZARDOUS TO HEALTH:

This product is not formulated to contain ingredients which have exposure limits established by U.S. agencies. It is not hazardous to health as defined by the European Union Dangerous Substances/Preparations Directives. See Section 15 for a regulatory analysis of the ingredients.

See Section 15 for European Label Information.

See Section 8 for exposure limits (if applicable).

### 3. HAZARDS IDENTIFICATION

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined not to be hazardous.

EFFECTS OF OVEREXPOSURE: No significant effects expected.

EMERGENCY RESPONSE DATA: Amber Liquid. DOT ERG No. - NA

### 4. FIRST AID MEASURES

EYE CONTACT: Flush thoroughly with water. If irritation occurs, call a physician.

SKIN CONTACT: Wash contact areas with soap and water.

INHALATION: Not expected to be a problem.

INGESTION: Not expected to be a problem. However, if greater than 1/2 liter (pint) ingested, seek medical attention.



## 5. FIRE-FIGHTING MEASURES

**EXTINGUISHING MEDIA:** Carbon dioxide, foam, dry chemical and water fog.

**SPECIAL FIRE FIGHTING PROCEDURES:** Water or foam may cause frothing.

Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposure. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

**SPECIAL PROTECTIVE EQUIPMENT:** For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** None. Flash Point C(F): >

210(410) (ASTM D-92). Flammable limits - LEL: NA, UEL: NA.

**NFPA HAZARD ID:** Health: 0, Flammability: 1, Reactivity: 0

**HAZARDOUS DECOMPOSITION PRODUCTS:** Carbon monoxide. Elemental oxides.

## 6. ACCIDENTAL RELEASE MEASURES

**NOTIFICATION PROCEDURES:** Report spills as required to appropriate authorities. U. S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to Coast Guard toll free number (800) 424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.

**PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:** Adsorb on fire retardant treated sawdust, diatomaceous earth, etc. Shovel up and dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal.

**ENVIRONMENTAL PRECAUTIONS:** Prevent spills from entering storm sewers or drains and contact with soil.

**PERSONAL PRECAUTIONS:** See Section 8

## 7. HANDLING AND STORAGE

**HANDLING:** No special precautions are necessary beyond normal good hygiene practices. See Section 8 for additional personal protection advice when handling this product.

**STORAGE:** Do not store in open or unlabelled containers. Store away from strong oxidizing agents or combustible material.



## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**VENTILATION:** No special requirements under ordinary conditions of use and with adequate ventilation.

**RESPIRATORY PROTECTION:** No special requirements under ordinary conditions of use and with adequate ventilation.

**EYE PROTECTION:** Normal industrial eye protection practices should be employed.

**SKIN PROTECTION:** No special equipment required. However, good personal hygiene practices should always be followed.

**EXPOSURE LIMITS:** This product does not contain any components which have recognized exposure limits. However, a exposure limit of 5.00 mg/m3 is suggested for oil mist.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Typical physical properties are given below. Consult Product Data Sheet for specific details.

**APPEARANCE:** Liquid

**COLOR:** Amber

**ODOR:** Mild

**ODOR THRESHOLD-ppm:** NE

**pH:** NA

**BOILING POINT C(F):** > 316 (600)

**MELTING POINT C(F):** NA

**FLASH POINT C(F):** > 210 (410) (ASTM D-92)

**FLAMMABILITY:** NE

**AUTO FLAMMABILITY:** NE

**EXPLOSIVE PROPERTIES:** NA

**OXIDIZING PROPERTIES:** NA

**VAPOR PRESSURE-mmHg 20 C:** < 0.1

**VAPOR DENSITY:** > 2.0

**EVAPORATION RATE:** NE

**RELATIVE DENSITY, 15/4 C:** 0.88

**SOLUBILITY IN WATER:** Negligible

**PARTITION COEFFICIENT:** > 3.5

**VISCOSITY AT 40 C, cSt:** > 90.0

**VISCOSITY AT 100 C, cSt:** 11.4

**POUR POINT C(F):** -7 (20)

**FREEZING POINT C(F):** NE

**VOLATILE ORGANIC COMPOUND:** NA

NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER TECHNICAL INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE



## 10. STABILITY AND REACTIVITY

STABILITY (THERMAL, LIGHT, ETC.): Stable.

CONDITIONS TO AVOID: Extreme heat.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide. Elemental oxides.

HAZARDOUS POLYMERIZATION: Will not occur.



## 11. TOXICOLOGICAL DATA

### ---ACUTE TOXICOLOGY---

ORAL TOXICITY (RATS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.

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INHALATION TOXICITY (RATS): Not applicable ---Harmful concentrations of mists and/or vapors are unlikely to be encountered through any customary or reasonably foreseeable handling, use, or misuse of this product.

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### ---REPRODUCTIVE TOXICOLOGY (SUMMARY)---

Dermal exposure of pregnant rats to representative formulations did not cause adverse effects in either the mothers or their offspring.

### ---CHRONIC TOXICOLOGY (SUMMARY)---

The base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of severely treated oils showed no evidence of carcinogenic effects. These results are confirmed on a continuing basis using various screening methods such as the Mobil Modified Ames Test and IP-346.

### ---SENSITIZATION (SUMMARY)---

Representative Mobil formulations have not caused skin sensitization in guinea pigs.



## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL FATE AND EFFECTS:** This product is expected to be inherently biodegradable. There is no evidence to suggest bioaccumulation will occur.

Acute LC/EC50 Fish: Juvenile Rainbow Trout: Practically non-toxic ---Based on test

## 13. DISPOSAL CONSIDERATIONS

**WASTE DISPOSAL:** Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration. Such burning may be limited pursuant to the Resource Conservation and Recovery Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at an appropriate government waste disposal facility. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

**RCRA INFORMATION:** The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

## 14. TRANSPORT INFORMATION

**USA DOT:** NOT REGULATED BY USA DOT.

**RID/ADR:** NOT REGULATED BY RID/ADR.

**IMO:** NOT REGULATED BY IMO.

**IATA:** NOT REGULATED BY IATA.



## 15. REGULATORY INFORMATION

Governmental Inventory Status: All components comply with TSCA and DSL.

EU Labeling: EU labeling not required.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III:  
This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

This product contains no chemicals reportable under  
SARA (313) toxic release program.

THIS PRODUCT HAS BEEN AUTHORIZED BY USDA FOR USE UNDER THE FOLLOWING  
CATEGORY: H2 - Lubricants With No Food Contact

The following product ingredients are cited on the lists below:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
TRICRESYL PHOSPHATE (0.07%)	1330-78-5	22
ZINC (ELEMENTAL ANALYSIS) (0.01%)	7440-66-6	22
PHOSPHORODITHOIC ACID, O,O-DI	68649-42-3	22
C1-14-ALKYL ESTERS, ZINC SALTS (2:		
1) (ZDDP) (0.10%)		

### --- REGULATORY LISTS SEARCHED ---

1=ACGIH ALL	6=IARC 1	11=TSCA 4	16=CA P65 CARC	21=LA RTK
2=ACGIH A1	7=IARC 2A	12=TSCA 5a2	17=CA P65 REPRO	22=MI 293
3=ACGIH A2	8=IARC 2B	13=TSCA 5e	18=CA RTK	23=MN RTK
4=NTP CARC	9=OSHA CARC	14=TSCA 6	19=FL RTK	24=NJ RTK
5=NTP SUS	10=OSHA 2	15=TSCA 12b	20=IL RTK	25=PA RTK
				26=RI RTK

Code key: CARC=Carcinogen; SUS=Suspected Carcinogen; REPRO=Reproductive



## 16. OTHER INFORMATION

USE: STEAM TURBINE OIL

NOTE: MOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBS.

-----  
Please call the Customer Response Center on 800-662-4525 for formulation disclosure.

\*\*\*\*\*  
For Internal Use Only: MHC: 1\* 1\* NA 0\* 0\*, MPPEC: A, TRN: 600189-00,  
GLIS: 400033, CMCS97: 970106, REQ: US - MARKETING, SAFE USE: L  
\*\*\*\*\*

Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user and WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or retransmission of this document, in whole or in part, is not permitted. Mobil assumes no responsibility for accuracy of information unless the document is the most current available from an official Mobil distribution system. Mobil neither represents nor warrants that the format, content or product formulas contained in this document comply with the laws of any other country except the United States of America.

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**\*END OF DOCUMENT\***







This MSDS should be attached or kept with the respective product with which it is associated.

\*\*\*\*\*  
MATERIAL SAFETY DATA SHEET - 75N01

Associated Grainger Items

42577

42577

J/S INDUSTRIES, INC.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME:

VACUUM PUMP OIL DVO-6-4, DVO-12-12, DVO-24-6, DVO-55

DATE ISSUED:

MARCH 1, 1995

CAS NO. COMPLEX MIXTURE N/A

SECTION I - LOCATION

COMPANY: J/S INDUSTRIES INC.

LOCATION: 601 W. FARNSWORTH AVE.

AURORA, IL 60507

EMERGENCY TELEPHONE NUMBER: 708/851-9444

SECTION II - CHEMICAL AND PHYSICAL PROPERTIES

NAME: PETROLEUM LUBRICATING OIL

FORMULA: N/A

HAZARDOUS DECOMPOSITION PRODUCTS:

CARBON MONOXIDE, CARBON DIOXIDE AND SULFUR OXIDES FROM BURNING

INCOMPATIBILITY (KEEP AWAY FROM):

STRONG OXIDIZERS SUCH AS HYDROGEN PEROXIDE, BROMINE AND CHROMIC ACID

TOXIC AND HAZARDOUS INGREDIENTS: NONE

FORM: LIQUID

APPEARANCE: VISCOUS LIQUID

SPECIFIC GRAVITY (WATER=1): 0.88

MELTING POINT: <-10 C (20 F)

VOLATILE: 0

VAPOR PRESSURE: 0

PH: N/A

VISCOSITY SUS AT 100 F: 200

ODOR: BLAND PETROLEUM

COLOR: LIGHT AMBER LIQUID

BOILING POINT: >350 C (700 F)

SOLUBILITY IN WATER: 0 AT 20 C

EVAPORATION RATE: 0

DENSITY: <1

STABILITY: STABLE UNDER NORMAL CONDITIONS

SECTION III - FIRE AND EXPLOSION DATA



**SPECIAL FIRE FIGHTING PROCEDURES:**

DO NOT USE WATER EXCEPT AS FOG

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

FLASHPOINT: (METHOD USED) CLEVELAND OPEN CUP >250 C (425 F)

FLAMMABLE LIMITS %: N/A

EXTINGUISHING AGENTS: DRY CHEMICAL OR WATERFOG OR CO2 OR FOAM

**NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) - HAZARD IDENTIFICATION**

HEALTH	FLAMMABILITY	REACTIVITY
1	1	0

**SECTION IV - HEALTH HAZARD DATA**

**HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)**

HEALTH	FLAMMABILITY	REACTIVITY
1	1	0

**PERMISSIBLE CONCENTRATIONS (AIR):**

IF USED IN APPLICATIONS WHERE A MIST MAY BE GENERATED, OBSERVE A TWA/PEL  
OF 5 MG/M3 FOR MINERAL OIL MIST (OSHA AND ACGIH)

**CHRONIC EFFECTS OF OVER EXPOSURE:**

PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE DERMATITIS (SKIN IRRITATION)  
SEE SECTION IX COMMENTS

**GENOTOXICITY PROPERTIES:**

NO IARC? NO OSHA? NO

**EMERGENCY AND FIRST AID PROCEDURES:**

YES: IMMEDIATELY FLUSH WITH LARGE QUANTITIES OF WATER FOR AT LEAST 15  
MINUTES AND CALL A PHYSICIAN.

SKIN CONTACT: REMOVE EXCESS WITH CLOTH OR PAPER. WASH THOROUGHLY WITH SOAP  
AND WATER.

INHALATION: REMOVE VICTIM TO FRESH AIR. CALL A PHYSICIAN.

IF SWALLOWED: CALL A PHYSICIAN IMMEDIATELY. DO NOT INDUCE VOMITING.  
(VOMITING MAY CAUSE ASPIRATION INTO LUNGS RESULTING IN CHEMICAL PNEUMONIA.)

**SECTION V - SPECIAL PROTECTION INFORMATION**

**VENTILATION TYPE REQUIRED (LOCAL, MECHANICAL, SPECIAL):**

LOCAL IF NECESSARY TO MAINTAIN ALLOWABLE PEL (PERMISSIBLE EXPOSURE LIMIT) OR  
TLV (THRESHOLD LIMIT VALUE)

**RESPIRATORY PROTECTION (SPECIFY TYPE):**

USE NIOSH/OSHA APPROVED RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE IF VAPOR  
CONCENTRATION EXCEEDS PERMISSIBLE EXPOSURE LIMIT

PROTECTIVE GLOVES: NEOPRENE TYPE

Eye PROTECTION: CHEMICAL SAFETY GOGGLES

OTHER PROTECTIVE EQUIPMENT: NONE



ORIGINAL  
(204)

SECTION VI - HANDLING OF SPILLS OR LEAKS

---

PROCEDURES FOR CLEAN-UP:

TRANSFER BULK OF MIXTURE INTO ANOTHER CONTAINER. ABSORB RESIDUE WITH AN  
O MATERIAL SUCH AS EARTH, SAND, OR VERMICULITE. SWEEP UP AND DISPOSE AS  
SOLID WASTE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

WASTE DISPOSAL:

DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL  
REGULATIONS.

SECTION VII - SPECIAL PRECAUTIONS

---

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

DO NOT HANDLE OR STORE AT TEMPERATURES OVER 65 C (150 F)

SECTION VIII - TRANSPORTATION DATA

---

D.O.T.: NOT REGULATED

REPORTABLE QUANTITY: N/A

HAZARD CLASSIFICATION: PETROLEUM LUBRICATING OIL

SPECIAL TRANSPORTATION NOTES: NONE

SECTION IX - COMMENTS

---

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE, TO THE BEST OF J/B  
O INDUSTRIES INC.'S KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE  
ISSUED. J/B INDUSTRIES INC. DOES NOT WARRANT OR GUARANTEE THEIR ACCURACY  
OF RELIABILITY, AND J/B INDUSTRIES INC. SHALL NOT BE LIABLE FOR ANY LOSS OR  
DAMAGE ARISING OUT OF THE USE THEREOF.

THE INFORMATION AND RECOMMENDATIONS ARE OFFERED FOR THE USER'S CONSIDERATION  
AND EXAMINATION, AND IT IS THE USER'S RESPONSIBILITY TO SATISFY ITSELF THAT  
... ARE SUITABLE AND COMPLETE FOR ITS PARTICULAR USE.



MSDS

ORIGINAL  
1/7

0085056317

MATERIAL SAFETY DATA SHEET (MSDS)

42849

This MSDS should be attached or kept with the respective product with which it is associated.

\*\*\*\*\*

MATERIAL SAFETY DATA SHEET - 75172

Associated Grainger Items

42849

42849

DUAL PURPOSE VACUUM PUMP OIL

MATERIAL SAFETY DATA SHEET

VACUUM PUMP OIL

P/N 4E849

REF PO 65017

SECTION I - COMPANY IDENTIFICATION

PRODUCT: DUAL PURPOSE VACUUM PUMP OIL

PACKED & DISTRIBUTED BY:

VIRGINIA RMP CORPORATION

4100 PLATINUM WAY

DALLAS, TEXAS 75237

CAT. NO.: L339, L340, L341, L342, L343

TELEPHONE NUMBERS:

OFFICE: 1-(214) 330-7731

EMERGENCY ONLY: 1-(800) 424-9300

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENTS (29 CFR 1910.1200)

EXPOSURE LIMITS: 6 HR. TWA

OSHA PEL

ACGIH TLV

HEAVY PARAFFINIC DISTILLATE (CAS#64741-88-4)

NE

NE

SINC DITHIOPHOSPHATE (CAS# 19210-06-1)

NE

NE

SINC DIALKYL DITHIOPHOSPHATE (CAS# 68457-79-4)

NE

NE

SECTION III - HAZARDS IDENTIFICATIONS

EMERGENCY OVERVIEW: CAUTION! EYE AND SKIN IRRITANT. HARMFUL IF SWALLOWED.

POTENTIAL HEALTH EFFECTS:

INHALATION: UNLIKELY.

EYE CONTACT: EYE IRRITATION DEVELOPS IMMEDIATELY ON CONTACT.

SKIN CONTACT: CAUSES MILD SKIN IRRITATION.

INGESTION: CAUSES IRRITATION OF MOUTH AND STOMACH. MAY CAUSE NAUSEA, VOMITING.

CHRONIC EFFECTS: NONE ESTABLISHED.

NOTE:

CARCINOGENICITY: LISTED IN NTP? NO

IARC? NO

OSHA REGULATED? NO

SECTION IV - FIRST AID MEASURES

INHALATION: REMOVE VICTIM TO FRESH AIR AND, IF NEEDED, IMMEDIATELY BEGIN ARTIFICIAL RESPIRATION. GIVE OXYGEN IF BREATHING IS LABORED. GET EMERGENCY MEDICAL HELP. CONTACT A PHYSICIAN IMMEDIATELY.



---  
EYE CONTACT: FLUSH EYES WITH WATER FOR 15 MINUTES. GET MEDICAL ATTENTION IF SYMPTOMS DEVELOP AND PERSIST.

---  
SKIN CONTACT: FLUSH WITH WATER OR SOAP AND WATER FOR 15 MINUTES OR UNTIL ALL HAVE BEEN REMOVED. SEEK MEDICAL ATTENTION IF SYMPTOMS DEVELOP AND PERSIST.

---  
INGESTION: DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION. IF SPONTANEOUS VOMITING OCCURS, KEEP HEAD BELOW HIPS. ASPIRATION OF EVEN SMALL AMOUNTS OF VOMIT INTO LUNGS MAY RESULT IN ASPIRATION PNEUMONITIS.

---  
SECTION V - FIRE FIGHTING MEASURES  
-----

FLASHPOINT (TEST METHOD): 424 F

FLAMMABLE LIMITS: LOWER: ND UPPER: ND

AUTOIGNITION TEMPERATURE:

GENERAL HAZARD:

FIRE FIGHTING INSTRUCTIONS: APPROACH FIRE FROM UPWIND SIDE. AVOID BREATHING SMOKE, FUMES, MIST OR VAPORS ON THE DOWNWIND SIDE. FIREFIGHTERS WEAR PROTECTIVE CLOTHING AND SELF CONTAINED BREATHING APPARATUS.

EXTINGUISHING MEDIA: DRY POWDER, CARBON DIOXIDE (CO2), WATER FOG OR SPRAY.

HAZARDOUS COMBUSTION PRODUCTS: ACRID SMOKE, CO, CO2 AND TOXIC FUMES OF SOX, SMO, POX.

---  
SECTION VI - ACCIDENTAL RELEASE MEASURES  
-----

LAND SPILL: EMERGENCY RESPONSE COORDINATOR MUST HAVE MANDATED TRAINING.

---  
WASH ALL IGNITION SOURCES. SMALL SPILLS: PICK UP WITH ABSORBENT MATERIALS AND PLACE IN NON-LEAKING CONTAINERS; SEAL TIGHTLY FOR PROPER DISPOSAL OR REUSE. LARGE SPILLS: EVACUATE THE HAZARD AREA OF UNPROTECTED PERSONNEL. WEAR APPROPRIATE RESPIRATOR AND PROTECTIVE CLOTHING. SHUT OFF SOURCE OF LEAK IF SAFE TO DO SO. DIKE AND CONTAIN. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS.

WATER SPILL:

CLEAN UP LEAKS/SPILLS IMMEDIATELY TO PREVENT SOIL OR WATER CONTAMINATION.

---  
SECTION VII - HANDLING AND STORAGE  
-----

HANDLING: AVOID CONTACT WITH SKIN, EYES AND CLOTHING. AFTER HANDLING THIS PRODUCT, WASH HANDS BEFORE EATING, DRINKING OR SMOKING. IF CONTACT OCCURS, REMOVE CONTAMINATED CLOTHING. IF NEEDED, TAKE FIRST AID ACTION SHOWN IN SECTION IV. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE.

STORAGE: STORE IN A COOL PLACE AWAY FROM IGNITION SOURCES. STORE AWAY FROM OXIDIZERS.

---  
SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION  
-----

ENGINEERING CONTROLS: LOCAL EXHAUST VENTILATION RECOMMENDED.

PERSONAL PROTECTION: RESPIRATORY PROTECTION AND CHEMICAL GLOVES NOT NEEDED UNDER PROPER CONDITIONS OF USE. USE CHEMICAL GOGGLES AND WEAR BOOTS, APREONS, DUCHES SHOWERS, EYE WASH AS NEEDED FOR PROTECTION AGAINST SPILLS AND/OR

---  
SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES  
-----

VAPOR PRESSURE: ND

VAPOR DENSITY (AIR=1): ND



SPECIFIC GRAVITY (H2O=1): 0.88 EVAPORATION RATE (BUAC=1): MD  
SOLUBILITY IN WATER: NEGLECTIBLE VOC: MD  
FR: NA FREEZING POINT:  
BOILING POINT: 221C  
TASTE & ODOR: LIGHT AMBER LIQUID, OIL ODOR.

#### SECTION X - STABILITY AND REACTIVITY

STABILITY: STABLE.

CONDITIONS TO AVOID: HIGH TEMPERATURE, IGNITION SOURCES.

MATERIALS TO AVOID: OXIDIZERS.

HAZARDOUS DECOMPOSITION PRODUCTS: FROM COMBUSTION: SMOKE, CO, CO2, TOXIC

FUMES OF HNO, POX, SOX.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

#### SECTION XI - TOXICOLOGICAL INFORMATION

ZINC DITHIOPHOSPHATE: LD50: 2130 MG/KG (ORAL-RAT)

#### SECTION XII - ECOLOGICAL INFORMATION

ZINC ACCUMULATES IN SOME ORGANISMS BUT IS NOT CONSIDERED TO BE BIO  
CONCENTRATIVE.

#### SECTION XIII - DISPOSAL CONSIDERATIONS

DISPOSE AS HAZARDOUS WASTE. CLASSIFICATION AND DOCUMENTATION IS REQUIRED  
BEFORE DISPOSAL. FOLLOW ALL LOCAL, STATE AND FEDERAL REGULATIONS.

#### SECTION XIV - TRANSPORTATION INFORMATION

PROPER SHIPPING NAME: NOT REGULATED.

HAZARD CLASS: NA

IDENTIFICATION NUMBER: NA

DOT EMERGENCY GUIDE #: NA

REPORTABLE QUANTITY (RQ): NA

INTERNATIONAL: NA

#### SECTION XV - REGULATORY INFORMATION

TSCA (TOXIC SUBSTANCE CONTROL ACT): COMPONENTS OF THIS PRODUCT ARE LISTED ON  
THE TSCA INVENTORY.

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT):  
NOT LISTED.

SARA TITLE XII (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): SECTION 313.

TOXIC MATERIALS: ZINC COMPOUNDS <2%

CALIFORNIA PROPOSITION 65: WARNING: THIS PRODUCT CONTAINS MINERAL OIL, A  
CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

#### SECTION XVI - OTHER INFORMATION

STATE RIGHT-TO-KNOW PROGRAMS: NOT LISTED.

#### NFPA RATINGS

HEALTH: 1

FLAMMABILITY: 1

REACTIVITY: 0



THIS PROTECTIVE EQUIPMENT: I SEE YOUR SUPERVISOR

PREPARED BY: VIRGINIA KMP CORPORATION

REVISED: 12/13/95

THIS INFORMATION IS FURNISHED WITHOUT WARRANTY, EXPRESSED OR IMPLIED, EXCEPT  
IT IS ACCURATE TO THE BEST KNOWLEDGE OF VIRGINIA KMP. THE DATA ON THIS  
SHEET RELATED ONLY TO SPECIFIC MATERIAL DESIGNATED HEREIN. VIRGINIA KMP  
ASSUMES NO LEGAL RESPONSIBILITY FOR USE OR RELIANCE UPON THESE DATA.



## BOOK 2

- 25 M-LINE 361A-20R SOLDER
- 26 M-BOND CURING AGENT-TYPE 15
- 27 WEST SYSTEM 105 RESIN
- 28 WEST SYSTEM 206 HARDENER
- 29 CLOTH 241
- 30 WOVEN ROVING 223
- 31 RESIN 77A
- 32 GEL COAT 78A
- 33 MEKP HARDENER 69C
- 34 PF-7035 C, FR-7035 F/K FILM ADHESIVE  
FIBER RESIN
- 35 TORQUE SEAL F-900
- 36 CRC LUBRICANT-CORROSION-INHIBITOR
- 37 NAPHTHA
- 38 TOOLTEC A 005
- 39 WRIGHTLON 7400
- 40 A4000 CLEAR
- 41 TOOLTEC C55



## MATERIAL SAFETY DATA SHEET

Issue Date: 8-2-99

---

### Section I - Product Identification

Trade Name: **Tooltec CS5**

Product Class:

Supplier: **Airtech International, Inc.**  
5700 Skylab Road  
Huntington Beach, CA 92647  
Telephone: 714-899-8100  
Fax: 714-899-8179

Emergency Telephone: 800-424-9300

CERCLA Ratings (scale 0-3):      Health=    Fire=    Reactivity=    Persistence=  
NFPA Ratings (scale 0-4):      Health=    Fire=    Reactivity=

Formula: Proprietary      CAS #:

### Section II - Hazardous Ingredients

Teflon CF<sub>2</sub> CF<sub>2</sub> N = 70%  
Silicone & Acrylic Adhesive = 30%

Non-hazardous pressure sensitive tapes made of inert teflon, silicone adhesive and acrylic adhesives.

### Section III - Physical Data

Description:      Light brown, no odor  
Boiling point:      Non-volatile - solid  
Vapor pressure (mm Hg.):      N/A  
Vapor density (Air=1):      N/A  
Solubility in water:      N/A  
Specific gravity:      2.1-2.3  
% volatile by volume:      N/A  
Evaporation Rate:      N/A



#### **Section IV - Fire and Explosion Data**

Fire and explosion hazard: No explosion hazard. Toxic fumes given off 932°F - 500°C.

Flash point: Non-burning

Flammable limits: N/A

Extinguishing media: Non-burning. Its pressure in a fire does not hinder the use of standard medium.

Special firefighting procedure: Wear self-contained breathing apparatus.

#### **Section V - Health Hazard Data**

None at ambient temperature.

##### Emergency and First Aid Procedure:

IN CASE OF INHALATION: If exposed to high temperature fumes, call a physician.

#### **Section VI - Reactivity Data**

Stability: Stable

Incompatibilities: Liquid sodium

Decomposition: HF-COF<sub>2</sub>

Polymerization: Will not occur

Conditions to avoid: Fumes at high temperature

#### **Section VII - Spill or Leak Procedure**

##### Steps to be taken in case material is released or spilled

N/A

Waste Disposal Method: Dispose of as harmless waste. Burning not recommended. Landfill is best method. Comply with state and local regulations.



### **Section VIII - Special Protection Information**

Ventilation: N/A

Respiratory Protection: N/A

Gloves: N/A

Eye Protection: N/A

### **Section IX - Special Precautions**

This product requires no special precautions. Use normal personal hygiene and good housekeeping when handling this material.

### **User's Responsibility**

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to your employees or customers. It is your responsibility to use this information to develop appropriate work practice guidelines and employee instructional programs for your operation.

### **Disclaimer of Liability**

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## DATA SHEET

### TOOLTEC® CS5 and CA5

PTFE Film Coated with Adhesive For Semi-Permanent Release  
And Mold Surface Reconditioning

#### Description

Tooltec® is a .005 inch (125 $\mu$ ) PTFE film coated with high temperature pressure sensitive adhesive. CS5 has a cured silicone adhesive and CA5 has a non silicone adhesive. Tooltec® is non reinforced allowing conformance to complexed contours. Tooltec® can be used to seal masters and leaky tool surfaces while providing semi-permanent and contamination free part release.

#### Application

Tooltec® should be applied using a vacuum bag and a prepreg pressure pad to work out wrinkles. Tooltec® can be applied without a pressure pad but wrinkles and entrapped air must be removed by hand (follow procedure #8). Application can also be aided with a heat gun on difficult contours. The following page shows how to fabricate a pressure pad and then how to apply Tooltec® using the pressure pad.

#### Material Characteristics

	<u>CS5</u>	<u>CA5</u>
Carrier Type:	PTFE	PTFE
Adhesive Type:	Silicone	Acrylic
Total Thickness (inches):	.0065 (165 $\mu$ )	.006 (152 $\mu$ )
Film Thickness (inches):	.005 (125 $\mu$ )	.005 (125 $\mu$ )
Adhesive Thickness (inches):	.0015 (37 $\mu$ )	.001 (25 $\mu$ )
Adhesion oz/inch/width:	40 (4.4N/cm)	30 (3.3N/cm)
Elongation %:	275	275
Breaking Strength lbs/inch/width:	28 (49N/cm)	28 (49N/cm)
Maximum Use Temperature:	600°F (316°C)	600°F (316°C)
Color:	Light Brown	Light Brown
Available sizes:	36" x 18 yards (91cm x 16m) 48" x 18 yards* (122cm x 16m)	36" x 18 yards (91cm x 16m) 48" x 18 yards** (122cm x 16m)

\* 5 roll minimum

\*\* 10 roll minimum

#### Shelf Life:

1 year when stored at 72°F (22°C)

### CATALOG POSITION: PRESSURE SENSITIVE TAPES

As the conditions or methods of use are beyond our control, Airtech International, Inc. does not assume any responsibility for the performance of this material for any particular use. The material is sold "as is". Airtech International, Inc. disclaims, and buyer waives, any and all implied warranties, including without limitation the implied warranties of merchantability and of fitness for particular use.

WE COVER THE WORLD WITH HIGH TEMPERATURE FILM





## MATERIAL SAFETY DATA SHEET

Issue Date: 7-14-99

---

### Section I - Product Identification

Trade Name: **A4000 Clear**  
Product Class:

Supplier: Airtech International, Inc.  
5700 Skylab Road  
Huntington Beach, CA 92647  
Telephone: 714-899-8100  
Fax: 714-899-8179

Emergency Telephone: 800-424-9300

### NFPA, NPCA-HMIS

NFPA Ratings (scale 0-4): Health= 2 Flammability= 1 Reactivity= 0

### Section II - Hazardous Ingredients

Exposure Limits for Particulates (Not Otherwise Regulated)

PEL (OSHA): 15 mg/m<sup>3</sup>, 8 Hr. TWA, total dust  
5 mg/m<sup>3</sup>, 8 Hr. TWA, respirable dust

#### Tetrafluoroethylene-Hexafluoropropylene Copolymer

CAS #: 25067-11-2 Percentage: >98

PEL (OSHA): None established

TLV (ACGIH): None established

#### Cadmium Sulfoselenide\*

CAS#: 12626-36-7 Percentage: <0.7

OSHA PEL 5 ug/m<sup>3</sup>, 8 Hr. TWA, , as Cd

TLV ACGIH 0.01 mg/m<sup>3</sup>, total dust, 0.002 mg/m<sup>3</sup>, respirable dust, as Cd, A2

\*Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Heated above 400°C (750°F) can evolve as a degradation products:



Hydrogen Fluoride as a degradation product

CAS #: 7664-39-3                      Percentage: <1  
OSHA PEL: 3 ppm, 8 Hr. TWA, as F  
ACGIH TLV: 3 ppm, 2.6 mg/m<sup>3</sup>, Ceiling as F

Carbonyl Fluoride as a degradation product

CAS #: 353-50-4                      Percentage: <1  
OSHA PEL: None established  
ACGIH TLV: 2 ppm, 5.4 mg/m<sup>3</sup>, 8 Hr. TWA  
                 STEL 5 ppm, 13 mg/m<sup>3</sup>

Perfluoroisobutylene as a degradation product

CAS #: 382-21-8                      Percentage: <0.01  
OSHA PEL: None established  
ACGIH TLV: Ceiling 0.01 ppm, 0.082 mg/m<sup>3</sup>

**Section III - Physical Data**

Description: Clear Film  
Odor: None  
Melting point: 260-275°C (500-527°F)  
Solubility in water: Insoluble  
Specific gravity: 2.1 - 2.2  
Form: Film

**Section IV - Fire and Explosion Data**

**Flammable Properties:**

Flash Ignition Temperature:	530-550°C (986-1022°F)	Method: ASTM D1929
Self Ignition Temperature:	520-560°C (968-1040°F)	Method: ASTM D1929
UL-94 Flammability Rating:	V-0	
Limiting Oxygen Index:	>95	Method: ASTM D2863

Difficult to ignite, and flame goes out when initiating source is removed (UL-94). Limited flame spread and low smoke generation (NFPA 262-1990, UL-910). Complies with NFPA definition of "limited combustible" material. High self-ignition and auto-ignition temperatures (ASTM D1929).

Hazardous gases/vapors produced in fire are hydrogen fluoride (HF), carbon monoxide, potentially toxic fluorinated compounds.



Fire Fighting Instructions: Wear self-contained breathing apparatus. Wear full protective equipment. Does not burn without an external flame. Protect from hydrogen fluoride fumes which react with water to form hydrofluoric acid. Wear neoprene gloves when handling refuse from a fire.

Extinguishing media: Water, foam, dry chemical, CO<sub>2</sub>

### Section V - Health Hazard Data

A4000 Clear is not hazardous as shipped. The primary hazard associated with these polymers is the inhalation of fumes from overheating or burning, which may cause "polymer fume fever". (See Human Health Effects Below)

#### Tetrafluoroethylene-Hexafluoropropylene Copolymer (FEP)

Inhalation 4 hour LC<sub>50</sub> > 4,900 mg/m<sup>3</sup> in rats. At very high exposure levels, animals were suffocated by accumulated dust in the lungs. Repeated exposure by ingestion caused no adverse effects.

#### HUMAN HEALTH EFFECTS OF OVEREXPOSURE TO FEP COPOLYMER:

Inhalation of fumes from overheating FEP may cause polymer fume fever, a temporary flu-like illness with fever, chills, and sometimes cough, of approximately 24 hours duration. There are some reports in the literature of persistent pulmonary effects in individuals, especially smokers, who have had repeated episodes of polymer fume fever. Because of complicating factors, such as mixed exposures and smoking history, these findings are uncertain. Protection against acute exposure should also provide protection against any potential chronic effects. Smokers should avoid contamination of tobacco products, and should wash their hands before smoking. Significant skin permeation after contact appears unlikely. There are no reports of human sensitization. Small amounts of carbonyl fluoride, hydrogen fluoride and perfluoroisobutylene may also be evolved when FEP Copolymer is overheated or burned.

Inhalation of low concentrations of HYDROGEN FLUORIDE can initially include symptoms of choking, coughing, and severe eye, nose, and throat irritation. Possibly followed after a symptomless period of 1 or 2 days by fever, chills, difficulty in breathing, cyanosis, and pulmonary edema. Acute or chronic overexposure to HF can injure the liver and kidneys.

Inhalation, ingestion, or skin or eye contact with CARBONYL FLUORIDE may initially include: skin irritation with discomfort or rash; eye corrosion with corneal or conjunctival ulceration; irritation of the upper respiratory passages; or temporary lung irritation effects with cough, discomfort, difficulty breathing, or shortness of breath. Symptoms may be delayed.

PERFLUOROISOBUTYLENE is extremely toxic gas for which inhalation is the most likely route of human exposure.



Inhalation exposure may cause severe symptoms of pulmonary edema with wheezing, difficulty in breathing, coughing up sputum and bluish discoloration of the skin. Coughing and chest pain may occur initially. However, severe symptoms of pulmonary edema may be delayed for several hours and then become rapidly worse. Over-exposure may cause death. (Inhalation 2 hour LC50 = 1.05 ppm in rats).

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures from thermal decomposition products.

#### Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as a carcinogens.

Material:	<u>IARC</u>	<u>NTP</u>	<u>OSHA</u>	<u>ACGIH</u>
Cadmium Sulfoselenide	X	X	X	X

#### **Emergency and First Aid Procedure:**

IN CASE OF INHALATION: No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

IN CASE OF SKIN CONTACT: The compound is not likely to be hazardous by skin contact but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

IN CASE OF EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

IN CASE OF INGESTION: No specific intervention is indicated as compound is not likely to be hazardous by ingestion. Consult a physician if necessary.

#### **Section VI - Reactivity Data**

##### **CHEMICAL STABILITY:**

Stable at normal temperatures and storage conditions.



#### INCOMPATIBILITY WITH OTHER MATERIALS:

Incompatible or can react with finely divided metal powders (e.g., aluminum and magnesium) and potent oxidizers like fluorine (F<sub>2</sub>) and related compounds (e.g., chlorine trifluoride, ClF<sub>3</sub>). Contact with incompatibles can cause fire or an explosion.

#### DECOMPOSITION:

Heating above 275°C (527°F) may cause evolution of particulate matter, which can cause polymer fume fever. (See Human Health Effects). Trace amounts of hydrogen fluoride, carbonyl fluoride, and perfluoroisobutylene may be evolved at about 380°C (716°F), which larger amounts at higher temperatures.

### Section VII - Spill or Leak Procedure

#### Steps to be taken in case material is released or spilled

Review Fire and Explosion Data Section IV before proceeding with clean up. Use appropriate personal protective equipment during clean up. Sweep up to avoid slipping hazard.

#### Ecotoxicological Information

Aquatic Toxicity: No information available. Toxicity is expected to be low based on insolubility in water.

#### Waste Disposal

Preferred options for disposal are (1) recycling and (2) landfill. Incinerate only if incinerator is capable of scrubbing out hydrogen fluoride and other acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial and local regulations.

### Section VIII - Special Protection Information

Respiratory Protection: A respirator is not required if local exhaust ventilation is adequate. At processing temperatures less than 400°C (750°F) a NIOSH/MSHA approved air purifying respirator with dust/mist cartridge or canister may provide protection from airborne particulates which cause polymer fume fever. At higher processing temperatures if ventilation is inadequate to maintain hydrogen fluoride and carbonyl fluoride concentrations below exposure limits, use a positive pressure air supplied respirator. Air purifying respirators may not provide adequate protection.

Protective Clothing: If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Eye/Face Protection: Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye and face contact due to splashing or spraying of molten material.



Other Protection: Avoid contamination of cigarettes or tobacco with dust from this material.

### **Section IX - Special Precautions**

Storage: Keep containers closed to avoid contamination.

Handling: Do not use a torch to clean this material from equipment without local exhaust ventilation and respirator.

Engineering Controls:

**VENTILATION:** Use local exhaust to completely remove vapors and fumes liberated during hot processing from the work area.

Medical Use: **CAUTION:** Do not use in medical applications involving permanent implantation in the human body.

### **Section X - Transportation Information**

Shipping Information DOT:

Proper Shipping Name: Not regulated

### **Section XI - Regulatory Information**

#### **STATE RIGHT-TO-KNOW LAWS**

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: Cadmium compound.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): Cadmium compound, carbon black.

**U.S. FEDERAL REGULATIONS:** TSCA Inventory Status: Listed



### **User's Responsibility**

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to your employees or customers. It is your responsibility to use this information to develop appropriate work practice guidelines and employee instructional programs for your operation.

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## DATA SHEET

Page 5  
7-29-98

### A4000 Clear, Red or White High Elongation Release Film

#### MECHANICAL

Elongation at break  
Tensile Strength

#### TEST METHOD

ASTM D882  
ASTM D882

#### A4000

350%  
3400 psi  
23.5 M Pa

#### THERMAL

Maximum use temperature:

IPPT 101

500°F  
260°C

Melt point by DSC

ASTM D3418

500-536°F  
260-280°C

#### FLAMMABILITY

A4000 is non-flammable

#### PHYSICAL

Density:  
Yield:

ASTM D792  
N/A

2.13-2.17 g/cc  
90 ft.<sup>3</sup>/#/mil  
18.4m<sup>3</sup>/kg/25μ

Shelf Life:  
Shrinkage

N/A

18 months  
3% @ 392°F (200°C)

#### RELEASE

A4000 will release from all resin systems.

#### Stock Sheeting Sizes:

<u>A4000 Red</u>			<u>A4000 Clear</u>	
Thickness Inches (μ)	Width Inches (cm)	Length Feet (m)	Width Inches (cm)	Length Feet (m)
.0008 (20)	50 (127)	500 (152)		
.0008 (20)	60 (152.4)	417 (127)		
.001 (25)	50 (127)	500 (152)	48 (121.9)	600 (183)
.001 (25)	60 (152.4)	417 (127)	58 (147.3)	497 (152)
.001 (25)	72 (182.9)	347 (106)		
.002 (50)	50 (127)	250 (76)	58 (147.3)	224 (68)
.002 (50)	60 (152.4)	208 (63)		
.002 (50)	72 (182.9)	174 (53)		

Perforations: Please refer to Page 1 of this section for perforation styles. A4000 Clear and A4000 Red are available in all perforation styles.

Bondable A4000 Clear is available treated one side (B.O.S.) or two sides (B.B.S.) to fit your individual application. Bondable A4000 is also available in Red and White (minimum order required).

- Notes:
- 1) A4000 Clear and Red can be heat sealed to produce wider sheets and lay flat tubing. Please consult Airtech Customer Service for more information.
  - 2) Other gauges are available upon request. (Minimum order required.)
  - 3) Custom manufactured shapes are available to fit your individual requirements.
  - 4) Useful service life of bondable surfaces may be limited to exposure due to moisture, high temperature, ultraviolet energy or some chemicals.

#### CATALOG POSITION: RELEASE FILMS

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WE COVER THE WORLD WITH HIGH TEMPERATURE FILMS





# MATERIAL SAFETY DATA SHEET

Issue Date: 2-18-99

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## Section I - Product Identification

Trade Name: **Wrightlon® 7400**  
Product Class:

Supplier: **Airtech International, Inc.**  
5700 Skylab Road  
Huntington Beach, CA 92647  
Telephone: 714-899-8100  
Fax: 714-899-8179

Emergency Telephone: 800-424-9300

CERCLA Ratings (scale 0-3): Health= Fire= Reactivity=  
Persistence=

NFPA Ratings (scale 0-4): Health= Fire= Reactivity=

Formula: Proprietary CAS #:

## Section II - Hazardous Ingredients

Other contaminants: E - Caprolactam = or less than 3%  
Exposure limits: ACGIH/TWA Values: PPM = 5  
MG/M3 = 1

## Section III - Physical Data

Description: Thin Green Film  
Melting point: 420°F  
Boiling point: Not applicable  
Specific gravity: 1.13 - 1.14  
PH: Not applicable  
Solubility in water: Not applicable  
Solvent solubility: Not applicable  
Vapor Density: Not applicable



#### Section IV - Fire and Explosion Data

Fire and explosion hazard:

Flash point: N/A LEL: N/A UEL: N/A

Auto ignition temperature: N/A

Viscosity: N/A

Extinguishing media: Water, foam, carbon dioxide, dry chemical

Firefighting procedure: Smoke and noxious gases (carbon monoxide, hydrocarbons, ammonia, hydrogen cyanide) evolved upon burning. Self-contained breathing apparatus in any closed space.

#### Section V - Health Hazard Data

Toxicity: See Section II

Carcinogen status: Not a known carcinogen

Emergency and First Aid Procedure:

IN CASE OF INHALATION: Film is not respirable.

IN CASE OF SKIN CONTACT: Wash with soap and water.

IN CASE OF INGESTION: (swallowing) Not a probable route of exposure.

IN CASE OF EYE CONTACT: Not a probable route of exposure.

#### Section VI - Reactivity Data

Stability Stable

Incompatibilities (materials to avoid) None known

Decomposition Temperatures over 555 degrees F may result in thermal decomposition.

Hazardous Polymerization Will not occur



### **Section VII - Spill or Leak Procedure**

Steps to be taken in case material is released or spilled: Sweep and discard.

Waste disposal method: Landfill in accordance with local, state and federal laws.

### **Section VIII - Special Protection Information**

Ventilation: N/A

Respiratory Protection: Not required if proper ventilation is provided.

Clothing: N/A

Gloves: N/A

Eye Protection: Safety glasses for good industrial hygiene practice.

Emergency Wash Facilities: N/A

### **Section IX - Special Precautions**

Precautions to be taken in handling and storing: Store at 50-55 R.H. at 70 - 75 degrees F.

Other precautions:

Inhalation (breathing): If exposed to excessive fumes from over-heating or combustion, move to fresh air.

Skin contact: N/A

### **User's Responsibility**

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precautions may be necessary. All health and safety information contained in this bulletin should be provided to your employees or customers. It is your responsibility to use this information to develop appropriate work practice guidelines and employee instructional programs for your operation.

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## MATERIAL SAFETY DATA SHEET

Issue Date: 7-26-99

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### Section I - Product Identification

Trade Name: Tooltec A005

Supplier: Airtech International, Inc.  
5700 Skylab Road  
Huntington Beach, CA 92647  
Telephone: 714-899-8100  
Fax: 714-899-8179

Emergency Telephone: 800-424-9300

CERCLA Ratings (scale 0-3):	Health=	Fire=	Reactivity=	Persistence=
NFPA Ratings (scale 0-4):	Health=	Fire=	Reactivity=	

### Section II - Hazardous Ingredients

( ) This material is considered non-hazardous under normal conditions.

### Section III - Physical Data

Description:	White to tan, odorless pliable fabric
Boiling point:	N/A
Specific gravity:	N/A
Solubility in water:	Insoluble
Vapor pressure at (mm Hg)	N/A
Vapor density (air=1)	N/A
% Volatile by Volume:	Nil
Evaporation Rate:	Nil

### Section IV - Fire and Explosion Data

Flash point: N/A

Extinguishing Media: All standard firefighting media

Special Fire Fighting Procedures: Does not burn (rated 94 V-0 by UL) without external source of fuel. In extreme fire situation, protection from hydrogen fluoride fumes should be employed. Wear respiratory protection if in a confined area.



Unusual Fire and Exposition Hazards: Dry Tooltec A005 will burn in an atmosphere of 100% oxygen when ignition source is present.

### Section V - Health Hazard Data

Effects of Overexposure: Thermal decomposition may cause fumes that result in flu-like symptoms if inhaled.

Emergency and First Aid Procedures: If inhaled, remove to fresh air; if not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Get medical attention.

### Section VI - Reactivity Data

Stability Stable

Incompatibilities Molten alkali metals, interhalogen compounds, oxidizing agents. Strong acids or bases will weaken fabrics.

Conditions to Avoid: Conditions above 250°C without adequate ventilation.

Decomposition Carbon monoxide, carbon dioxide, silicon dioxide. Above 250°C hydrofluoric acid, perfluorocarbon olefins.

Polymerization Will not occur.

### Section VII - Spill or Leak Procedure

Steps to be taken in case material is released or spilled

N/A

Waste Disposal Method

(1) Landfill (2) Complete combustion and removal of gaseous products by alkaline scrubbing. Disposal methods must conform to local, state and federal regulations.

### Section VIII - Special Protection Information

Ventilation Local exhaust where material is heated above 250°C.

Mechanical Ventilation Avoid contaminating tobacco products

Gloves N/A



Eye Protection N/A

Other Protective Equipment N/A

### **Section IX - Special Precautions**

Considered non-hazardous when handled and stored by conventional methods.

When exposed to elevated temperatures (250°C) toxic fumes evolve. Avoid inhalation. Smoking should be prohibited in areas where this material is being fabricated, or, in general where there may be dust from it.

### **User's Responsibility**

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### DATA SHEET

#### TOOLTEC® A005, A007, A012 Permanent Tool Release Without Contamination

##### Description

Tooltec® pressure sensitive tapes are designed to stick to tool surfaces to provide semi-permanent release and a reconditioned surface. Tooltec® can be used on all types of molds, press platens, caul sheets or any surface that comes in contact with resins or adhesives. Release agents are not required thereby reducing cost and part contamination problems. Standard Tooltec® comes with fully cured silicone pressure sensitive adhesive. Tooltec® can also be supplied with acrylic adhesive on special order.

##### Application

Apply Tooltec® 2 inches from the edge of the GS sealant tape. Place breather strip around edge of Tooltec® so air can escape and not lift up the Tooltec®. Adhere Tooltec® to metal or plastic tool surfaces where release from epoxies, urethanes, polyesters, polyamides, polyimides and phenolics is needed. Excellent release without using release agents. Tooltec® will usually last about six months before replacement. We recommend A007 Tooltec® for hot presses. When removing Tooltec® from the tool, you may use a shop approved solvent to soften the adhesive. Adhesive can then be scraped off the tool.

##### Physical Properties

	<u>A005</u>	<u>A007</u>	<u>A012</u>
Carrier Type:	PTFE/Glass	PTFE/Glass	PTFE/Glass
Adhesive Type:	Silicone	Silicone	Silicone
Total Thickness, Inches	.005 (125 $\mu$ )	.007 (175 $\mu$ )	.0120 (300 $\mu$ )
Film Thickness, Inches	.003 (75 $\mu$ )	.005 (125 $\mu$ )	.010 (200 $\mu$ )
Adhesive Thickness, Inches	.002 (50 $\mu$ )	.002 (50 $\mu$ )	.020 (50 $\mu$ )
Adhesion, oz/inch/width	45 (4.9N/cm)	50 (5.5N/cm)	75 (8.2N/cm)
Elongation %:	8	5	5
Breaking Strength lbs/inch/width	120 (210N/cm)	140 (245N/cm)	160 (280N/cm)
Maximum Use Temperature:	600°F (316°C)	600°F (316°C)	600°F (316°C)
Color:	Light Brown	Light Brown	Light Brown
Available Sizes:		1" (2.54cm) x 36 yards (33m) 2" (5.08cm) x 36 yards (33m) 36" (91cm) x 18 yards (16m) 48" (122cm) x 18 yards (16m)	

Shelf Life: 1 year when stored at 72°F (22°C).

#### CATALOG POSITION: PRESSURE SENSITIVE TAPES



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## DATA SHEET

### WRIGHTLON® NYLON BAGGING FILMS

The Highest Elongation Of Any Standard Nylon Vacuum Film

<u>MECHANICAL</u>	<u>Unit Test Method</u>	<u>Econolon</u>	<u>5400</u>	<u>6400</u>	<u>7400</u>	<u>8400</u>
Elongation at break	% ASTM D 882	350+	350+	300+	350+	300+
Tensile strength	>psi ASTM D 882	7000	7000	8000	8000	9000
	N/mm <sup>2</sup>	48	48	55	55	62
<u>THERMAL</u>						
Maximum use temperature	°F IPPI T 101	300	350	400	400	450
	°C	149	177	204	204	232
Melt point (minimum)	°F ASTM D 789	380	400	420	420	500
crystalline	°C	193	204	215	215	260
Flammability (Self Extinguishing)	IPPI T 102	Yes	Yes	Yes	Yes	Yes
<u>CHEMICAL</u>						
Materials to avoid:	Strong Oxidizers	Yes	Yes	Yes	Yes	Yes
	Phenol Compounds(1)	Yes	Yes	Yes	Yes	Yes
<u>PHYSICAL</u>						
Density	g/cm <sup>3</sup> ASTM D 792	1.13	1.13	1.14	1.13	1.13
Yield	in <sup>2</sup> /#/mil	24500	24500	24300	24500	24500
	M <sup>2</sup> /kg/25μ	34.8	34.8	34.5	34.8	34.8
Color		Clear	Clear	Yellow	Bl/Gr	Blue
Shelf Life	Months IPPI P 201	18	18	18	18	18

Gauges Available (1) Inches .002 & .003 and .005  
μ 50, 75, and 125

Forms Available (2) Sheeting, Lay Flat Tubing, Center (V) Fold & Bags

- NOTES: (1) Other gauges available on special order.  
(2) Consult the dimension chart on Page 1 in this section for dimensional information. Custom sizes and manufactured shapes are available to fit your individual requirements.  
(3) Please consult Airtech for further information.  
(4) Econolon has the same properties of Wrightlon 5400 in .0015" (33μ) thickness.

### CATALOG POSITION: BAGGING FILMS

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# OSHA Standards Interpretation and Compliance Letters

## 02/01/1994 - Hazard Communication Standard and Material Safety Data Sheets.

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### ◀ OSHA Standard Interpretation and Compliance Letters - Table of Contents

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- **Record Type:** Interpretation
  - **Standard Number:** 1910.1200
  - **Subject:** Hazard Communication Standard and Material Safety Data Sheets.
  - **Information Date:** 02/01/1994
- 

February 1, 1994

James J. Balsamo, Jr., C.S.P.  
Occupational Safety and Health Consultant  
5108 Burke Drive  
Metairie, Louisiana 70003

Dear Mr. Balsamo:

Thank you for your letter of July 27 concerning the requirements under the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard (HCS), 29 CFR 1910.1200, for Material Safety Data Sheets (MSDS). Please accept my regret for the delay in responding.

Your questions will be answered below in the order they were presented in your letter.

#### **Question 1:**

**Situation #1:** Can a central repository of MSDS be kept at one location in one of the buildings that support seven buildings?

**Situation #2:** ... fifty buildings are on city blocks which are all contiguous in a five square block area, with the same personnel and



security situation as noted in situation #1 above. Can a single MSDS repository serve all these buildings?

**Situation #3:** ... does a single repository provide for each building with security having twenty-four hour a day access to them for all departments in that building meet the intent of the OSHA regulations?

The key to compliance with the HCS is that employees have no barriers to access to the information and that the MSDSs be available during all workshifts. The HCS is a performance-oriented standard. A performance-oriented standard gives employees the flexibility to adapt the rule to the needs of the workplace situation, instead of having to follow specific rigid requirements. Situations #1, #2, and #3 would have to be evaluated within the context of the employer's Hazard Communication Program.

As you know, the HCS specifies that MSDS must be maintained on site and readily accessible during each workshift to employees when they are in their work area(s). Again, the situations you describe above could meet that requirement as long as there are no barriers to employees accessing the MSDSs.

**Question 2:** Specific chemicals such as acetone, xylene, etc. do not always come from the same manufacturer and each manufacturer supplies an MSDS for their chemicals. Is it necessary to have in the central repository copies of all MSDSs from each company or could one complete MSDS serve the needs for all acetone, etc. user for routine purposes, emergency situations or both?

Given the performance-oriented nature of the standard, an employer must be certain that employees are provided all the necessary information concerning the hazards of chemicals in the workplace. There are a number of concerns with the approach you describe. First, you must ensure that the specific identity on the MSDS can be cross referenced to the corresponding label of the hazardous chemical containers. Second, the employer must ensure that employees are informed during the hazard communication training of this practice of using one MSDS as representative of all vendors, otherwise it could lead to confusion. Third, the MSDS you select must have complete and accurate information as required by section (g)(3) of the HCS. And finally, the standard requires that the MSDS contain the name, address and telephone number of the party who prepares or distributes the MSDS. The party listed must be able to provide additional information on the hazardous chemicals or clarification of the information on the MSDS, as well as, additional emergency procedures, if necessary, in lieu of the actual manufacturer. A chemical manufacturer, importer or distributor may not wish to and is not required to act as the responsible party for a chemical that they did not



produce.

**Question 3:** If your answer to situations #1 and #2 above is "No" but "Yes" to Situation #3, how does this affect your response to question #2 above?

We believe our responses to questions 1 and 2 address your concerns.

**Question 4:** Does using, in an emergency situation, one MSDS from, for example Sigma/Aldrich's CD ROM constitute compliance with the OSHA standards?

1. You don't know the manufacturer but only the name of the chemical to which the person is exposed.

2. You don't know the manufacturer's name and the chemical name, however, the Sigma Aldrich CD ROM access is the fastest way to get the chemical information to those who need it, until the specific MSDS, chemical and/or manufacturer's name, are obtained.

You describe a situation where the company is not in compliance with the HCS; the employer does not have essential information about hazardous chemicals in the workplace. The CD ROM alternative that you described would not meet the HCS intent. The HCS requires that employers have an MSDS for each hazardous chemical which they use. Part of the employer's Hazard Communication Program is to ensure that all MSDSs are maintained and that "good faith efforts" are taken to acquire missing MSDSs from the chemical manufacturer, importer or distributor.

The specific chemical's MSDS itself, not just "MSDS information" must be available to workers. If the MSDSs utilized in your electronic system are specific to each product and contain the same chemical identity as used on the required label of the chemical, so as to allow cross referencing between the two, then this aspect of your system would meet the intent of the standard. If the MSDS provided is not product specific, the intent of the standard would not be met.

We hope this information is helpful. If you have any further questions please contact [the Office of Health Compliance Assistance at (202) 693-2190].

Sincerely,

Ruth McCully, Director  
Office of Health Compliance Assistance



July 27, 1993

Ms. Patricia K. Clark  
Director, Directorate of Compliance Programs  
U.S. Department of Labor  
Occupational Safety and Health Administration  
Room N-3463  
200 Constitution Avenue, N.W.  
Washington, D. C. 20210

Dear Patricia K. Clark:

I have read recently several OSHA abstracts and OSHA communications that answered specific questions related to the Hazard Communication Standard. They were written by you and other OSHA representatives. I have four direct questions that I, as a consultant in occupational safety and health, have been asked.

### **Question 1**

#### **Situation #1:**

A research facility owned and operated by one company and all workers are employees of that company. One workplace is seven buildings within a three-square block area. Some properties are contiguous and some are two to three blocks away. Each building is considered as a work area in the total workplace. Each work area, i.e. "building," contains many laboratories (25 to 100 per building). A number of laboratories (i.e. ten) may belong to one department carrying out tasks associated with that function and other groups of laboratories are under different departments carrying out different functions. All are employees of one company. My questions are as follows:

Can a "Central Repository" of Material Safety Data Sheets be kept at one location in one of these buildings that supports all seven buildings, i.e. the workplace, as long as everyone knows how to get access to them and access can be accomplished twenty-four hours a day by contacting the security office who can take the person to the MSDSs and open the room where they are kept? Security is a twenty-four hour a day, seven days a week, operation for all the seven buildings in question.



They have keys to the MSDS Repository.

**Situation #2:**

Another scenario is that fifty (50) buildings are on city blocks which are all contiguous in a five square block area, with the same personnel and security situation as noted in Situation #1 above. Can a single MSDS Repository serve all these buildings?

**Situation #3:**

If your answer is "No" to Situations #1 and #2 above, does a *single repository provided for each building with security having twenty-four hour a day access to them for all departments in that building meet the intent of the OSHA regulations?*

**Question 2**

In the "OSHA Instruction, CPL 2-2.38B" referenced in a letter from you, dated July 6, 1990, to Ms. Betty J. Dabney, Ph.D. it states that "The MSDS used in an employer's hazard communication program must be specific to each **chemical used on-site.**" Please be aware of the fact that there are several bottles of specific chemicals, i.e. acetone, xylene, from different chemical manufacturers that are used in the various laboratories in the "workplace" as noted in question #1 above. Each manufacturer supplies MSDSs for their chemicals. Is it necessary to have in the Central Repository copies of all MSDSs from each company or could one complete MSDS serve the needs for all acetone, etc. users for routine purposes, emergency situations, or both?

**Question 3**

If your answer to Situations #1 and #2 above is "No," but "Yes" to Situation #3, how does this affect your response to Question #2 above?

**Question 4**

Does using, in an emergency situation, one MSDS from, for example, Sigma/Aldrich's CD ROM constitute compliance with OSHA standards:

1. You don't know the manufacturer but only the name of the chemical to which the person is exposed.
2. You do know the manufacturers name and the chemical name, however, the Sigma Aldrich CD ROM access is the fastest way to get the chemical information to those who need



it, until the specific MSDS, chemical and/or manufacturer's name, are obtained.

Thank you for your time and consideration in this matter. I will await your prompt reply.

Sincerely,

James J. Balsamo, Jr., C.S.P.  
Occupational Safety & Health Consultant

---

◀ OSHA Standard Interpretation and Compliance Letters - Table of Contents



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## Internet HazDat - Substance Information

More information on building a query

---

### Query Results:

cas\_id : 008030-30-6

substance\_name : NAPHTHA

substance\_rank : 0

substance\_class :

NTP Cancer Classification : Not classified by the NTP

TSCA\_regulated : Y

FIFRA\_regulated :

RCRA\_regulated :

CERCLA\_regulated :

---

### Toxicological Profile Information

tox\_profile\_no :

tox\_profile\_name :

to\_toxfaq :

Public Comment Release :

Final Publication Release :

NTIS\_number :



# MATERIAL SAFETY DATA SHEET

## Section 1: Product & Company Identification

Product Name: **3-36 Multi Purpose Lubricant and Corrosion Inhibitor - Aerosol**

Product Number(s): **03004, 03005, 03093, 73005, 83005**

Manufactured By: **CRC Industries, Inc.**

(215) 674-4300

885 Louis Drive, Warminster, PA 18974

24-Hour Emergency Information: CHEMTREC

(800) 424-9300

## Section 2: Composition/Information on Ingredients

Component	CAS NUMBER	ACGIH TLV	OSHA PEL	OTHER LIMITS	%
Petroleum Distillate	64742-47-8	NE	400 ppm	100 ppm	60-70
Inhibited Paraffinic Oil	Mixture 5 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	(mist)	25-30	
Carbon Dioxide	124-38-9	5000 ppm	5000 ppm	NE	< 10

## Section 3: Hazards Identification

### Emergency Overview

Appearance & Odor: Blue liquid, pleasant odor.

**DANGER: Flammable. Harmful or Fatal if Swallowed. Contents Under Pressure.**

### Potential Health Effects:

Inhalation: Headaches, nausea, dizziness and breathing problems.  
 Eyes: Irritation  
 Skin: Dryness  
 Ingestion: NA

Carcinogenicity: OSHA: No

IARC: No

NTP: No

Chronic Overexposure: Dermatitis.

Medical Conditions Aggravated by Exposure: NA

## Section 4: First Aid Measures

Inhalation: Remove to fresh air. Give artificial respiration if necessary.

Eyes: Flush with large amounts of water for 15 minutes.



**Product Name:** 3-362 Multi Purpose Lubricant and Corrosion Inhibitor - Aerosol

**Product Number (s):** 03004, 03005, 03093, 73005, 83005

**Skin:** Remove contaminated clothing and wash area with soap and water.

**Ingestion:** Call a physician. Do not induce vomiting.

### Section 5: Fire-Fighting Measures

**Flashpoint:** 175 °F **Method:** TCC **LEL:** ND **UEL:** ND

**Extinguishing Media:** CO<sub>2</sub>, dry chemical and foam

**Hazardous Combustion Products:** CO<sub>2</sub> and carbon monoxide (fire)

**Fire-fighting Instructions:** Remove containers from fire area if possible. Use self-contained breathing apparatus for fire fighting. Aerosol cans may explode if heated above 120°F.

<b>NFPA:</b>	<b>Health:</b>	1	<b>Flammability:</b>	2	<b>Reactivity:</b>	0
<b>HMS:</b>	<b>Health:</b>	1	<b>Flammability:</b>	2	<b>Reactivity:</b>	0 PPE: B

### Section 6: Accidental Release Measures

**Spill/Leak Procedures:** Usually not a problem with aerosols. Area should be ventilated. Absorbent should be used to pick up excess material. All used and unused product should be disposed of in accordance with federal, state and local regulations.

### Section 7: Handling and Storage

**Handling Procedures:** Store in a cool, dry area. Aerosol cans must be maintained below 120°F to prevent cans from exploding.

### Section 8: Exposure Controls/Personal Protection

**Engineering Controls:** Adequate to prevent accumulation of vapors. Use mechanical means if necessary to maintain levels below the exposure limits. If working in a confined space, follow applicable OSHA regulations.

**Respiratory:** Use NIOSH/MSHA compliant respirators or self-contained breathing apparatus above exposure limits. Follow OSHA regulations 29 CFR 1910.134.

**Protective Clothing/Equipment:** Wear chemically protective gloves and safety glasses. Use a splash apron and boots if splashing occurs.

### Section 9: Physical & Chemical Properties

<b>Physical State:</b>	Liquid	<b>Appearance &amp; Odor:</b>	Blue liquid, pleasant odor
<b>Specific Gravity:</b>	0.8167	<b>Boiling Point:</b>	380°F (initial)
<b>Freezing Point:</b>	ND	<b>Vapor Pressure:</b>	0.23 mm
<b>Evaporation Rate:</b>	slow .01 (toluene=1)	<b>Vapor Density (air = 1)</b>	> air
<b>pH:</b>	NA	<b>Solubility:</b>	Negligible in water.
<b>Volatile Organic Compounds: %</b>	70.1	<b>g/l:</b>	572.51 lbs./gal: 4.78



Product Name: **3-36 Multi Purpose Lubricant and Corrosion Inhibitor - Aerosol**

Product Number (s): **03004, 03005, 03093, 73005, 83005**

---

Section 10: Stability and Reactivity

Stability:	Stable	Hazardous Polymerization:	No
Chemical Incompatibilities:	Strong oxidizers.		
Materials to Avoid:	Strong oxidizers.		
Hazardous Decomposition Products:	None		

Section 11: Toxicological Information

Long-term toxicological studies have not been conducted for this product. See Section 3 of this MSDS for acute symptoms of overexposure and carcinogenicity information.

---

Section 12: Ecological Information

Ecotoxicity:	No data available.
Environmental Fate:	No data available for biodegradation.

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Section 13: Disposal Considerations

Disposal: This material if discarded may be hazardous waste under U.S. EPA RCRA regulations. All disposal activities must comply with federal, state and local regulations. Contact your local or state environmental agency for specific rules. Do not dump into sewers, on the ground or into any body of water.

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Section 14: Transportation Information

Shipping Name:	Consumer Commodity		
Hazard Class:	ORM-D	UN Number:	NA
Label:	NA	Placard:	NA
Special Provisions:	NA	Packing Group:	NA

---

Section 15: Regulatory Information

TSCA:	All components are either listed under TSCA or are exempt.		
SARA Title III:	Section 311-312:	Acute/Pressure	Section 313*: None
CERCLA/Superfund (RQ):		NA	
Extremely Hazardous Substances:		No	
California Prop 65:		No	

\* See section 2 for percentage

---

Section 16: Additional Information



**Product Name:** 3-368 Multi Purpose Lubricant and Corrosion Inhibitor - Aerosol

**Product Number(s):** 03004, 03005, 03093, 73005, 83005

**Prepared By:** Adam M. Selisker

**Date:** February 26, 2001

**Technical Information:** (800) 521-3168

**CRC #:** 510

This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate.

Before using any product, read all warnings and directions on the label.

CAS: Chemical Abstract Service  
ppm: Parts per Million  
TCC: Tag Closed Cup  
LEL: Lower Explosive Limit  
UEL: Upper Explosive Limit  
PPE: Personal Protection Equipment  
COC: Cleveland Open Cup

NA: Not Applicable  
ND: Not Determined  
NE: Not Established  
g/L: grams per Liter  
lbs/gal: pounds per gallon  
RQ: Reportable Quantity  
TCC: Tag Open Cup



## ORGANIC PRODUCTS -- F-900 TORQUE SEAL - SEALING COMPOUND

## MATERIAL SAFETY DATA SHEET

EPA: 8030004081137

Manufacturer's CAGE: 01195

Part No. Indicator: B

Part Number/Trade Name: F-900 TORQUE SEAL

## General Information

Item Name: SEALING COMPOUND

Company's Name: ORGANIC PRODUCTS CO.

Company's Street: 1963 IRVING BOULEVARD

Company's P. O. Box: 428

Company's City: IRVING

Company's State: TX

Company's Country: US

Company's Zip Code: 75060-4555

Company's Emerg Ph #: 214-438-7321

Company's Info Ph #: 214-438-7321

Distributor/Vendor # 1: STEVEN INDUSTRIES

Distributor/Vendor # 1 Cage: 33150

Record No. For Safety Entry: 002

Tot Safety Entries This Stk#: 002

Status: FE

Date MSDS Prepared: 05JAN91

Safety Data Review Date: 19DEC94

Supply Item Manager: GSA

Preparer's State: NK

MSDS Serial Number: BMZDN

Hazard Characteristic Code: F4

Unit Of Issue: TU

Unit Of Issue Container Qty: 5 OZ TU

## Ingredients/Identity Information

Proprietary: NO

Ingredient: METHANOL

Ingredient Sequence Number: 01

Percent: 60

NIOSH (RTECS) Number: PC1400000

CAS Number: 67-56-1

OSHA PEL: S,200PPM/250STEL

ACGIH TLV: S,200PPM/250STEL; 93

Other Recommended Limit: NONE SPECIFIED

Proprietary: NO

Ingredient: ETHANOL

Ingredient Sequence Number: 02

Percent: 40

NIOSH (RTECS) Number: KQ6300000

CAS Number: 64-17-5

ACGIH TLV: 1000 PPM

Other Recommended Limit: NONE SPECIFIED

## Physical/Chemical Characteristics

Appearance And Odor: HEAVY THICK PASTE. ALCOHOL ODOR.

Boiling Point: 150F,66C

Vapor Pressure (MM Hg/70 F): 42.00

Solubility In Water: NONE

Percent Volatiles By Volume: 50

## Fire and Explosion Hazard Data

Flash Point: 109F,43C

Flash Point Method: TOC

Extinguishing Media: CARBON DIOXIDE OR DRY CHEMICAL FOR SMALL FIRES.



ALCOHOL FOAM FOR LARGE FIRES.

Special Fire Fighting Proc: USE SELF-CONTAINED BREATHING APPARATUS WITH FULL FACE PIECE WITH PRESSURE DEMAND.

Unusual Fire And Expl Hazrds: VAPOR HEAVIER THAN AIR, KEEP AWAY FROM FLAME-LIGHTS, LIGHTS, FLAMES, SPARKS, HEATERS AND SMOKERS.

Reactivity Data

Stability: YES

Cond To Avoid (Stability): AVOID HEAD, SPARKS, FIRES.

Hazardous Decomp Products: THERMAL DECOMPOSITION MAY PRODUCE CARBON MONOXIDE AND/OR CARBON DIOXIDE.

Hazardous Poly Occur: NO

Health Hazard Data

Signs/Symptoms Of Overexp: MINOR IRRITATION FROM PROLONGED BREATHING.

MINOR IRRITATION TO SKIN AND EYES. NAUSEA, VOMITING IF SWALLOWED.

Emergency/First Aid Proc: REMOVE TO FRESH AIR. WASH AFFECTED AREAS WITH WATER. IF SWALLOWED, INDUCE VOMITING. CALL PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: ABSORB LIQUID; USE ABSORBENT MATERIAL AND TRANSFER TO HOOD. ELIMINATE ALL IGNITION SOURCES DESTROY REMAINING MATERIAL BY INCINERATION.

Waste Disposal Method: INCINERATE IN FURNANCE, OR BY LIQUID INCINERATION. DEPOSIT IN TOXIC LANDFILL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGS.

Precautions-Handling/Storing: WEAR RESISTANT GLOVES SUCH AS NEOPRENE, EYE PROTECTION, CHEMICAL SPLASH GOGGLES. PROTECTIVE EQUIPMENT TO PREVENT PROLONGED SKIN CONTACT.

Control Measures

Protective Gloves: YES; NEOPRENE

Eye Protection: SAFETY GOGGLES

Other Protective Equipment: SAFETY SHOWER AND EYE BATH.

Transportation Data

Trans Data Review Date: 92078

DOT PSN Code: GJR

DOT Proper Shipping Name: FLAMMABLE LIQUIDS, TOXIC, N.O.S

DOT Class: 3

DOT ID Number: UN1992

DOT Pack Group: II

DOT Label: FLAMMABLE LIQUID, POISON

IMO PSN Code: LCT

IMO Proper Shipping Name: PAINT OR PAINT RELATED MATERIAL

IMO Regulations Page Number: 3372

IMO UN Number: 1263

IMO UN Class: 3.3

IMO Subsidiary Risk Label: -

IATA PSN Code: SXH

IATA UN ID Number: 1263

IATA Proper Shipping Name: PAINT

IATA UN Class: 3

IATA Label: FLAMMABLE LIQUID

AFI PSN Code: MCP

AFI Prop. Shipping Name: FLAMMABLE LIQUIDS, POISONOUS, N.O.S.

AFI Class: 3

AFI ID Number: UN1992

AFI Pack Group: III

AFI Label: 6.1

AFI Basic Pac Ref: 7-7

MMAC Code: NK



Disposal Data

Label Data

Label Required: YES

Label Status: G

Common Name: F-900 TORQUE SEAL

Special Hazard Precautions: N/K MINOR IRRITATION FROM PROLONGED BREATHING.  
MINOR IRRITATION TO SKIN AND EYES. NAUSEA, VOMITING IF SWALLOWED.

Label Name: ORGANIC PRODUCTS COMPANY

Label Street: 1963 IRVING, BLVD

Label City: IRVING

Label State: TX

Label Zip Code: 75060

Label Country: US

Label Emergency Number: 214-438-7321



01-25-2002

PIASECKI AIRCR ESSINGTON 985  
PIASECKI AIRCRAFT CORP  
WEST TERMINUS OF SECOND STREET  
ESSINGTON, PA 19029  
US

0011454FRPPSD43

SUBJECT: Material Safety Data Sheet

Dear MSDS Coordinator,

Enclosed, find the Material Safety Data Sheet(s) (MSDS) for the requested product(s). We have reviewed our products, conducted a hazard determination, and prepared MSDSs in compliance with the requirements of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS). Our MSDSs also provide information on any toxic chemical subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA).

If this product, or any component of it, is considered to be hazardous or carcinogenic under the OSHA Hazard Communication Standard or the WHMIS regulations, information is provided in Section 2: COMPOSITION/INFORMATION ON INGREDIENTS or in Section 3: HAZARDS IDENTIFICATION.

You have received the MSDS because

1. You have ordered the products for the first time, or
2. Your company reordered products where the MSDS has changed since you last ordered, or
3. You requested the MSDS.

If you have any questions, please contact your Sales Representative.

Sincerely yours,

Global Regulatory



# PF7035 C

## MATERIAL SAFETY DATA SHEET

### SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### COMPANY INFORMATION

Fiber Resin Corporation  
H.B. Fuller Company Subsidiary  
20701 Nordhoff Street  
Chatsworth, CA 91311  
Phone: 818-882-3022  
Fax: 818-709-0399

#### MSDS INFORMATION

Preparation Date: 18 December 1998  
Supersedes: 25 April 1995  
Prepared By: Industrial Hygiene  
Phone Number: 651-236-5842

Medical Emergency Phone Number: 1-888-853-1758  
Transport Emergency Phone Number (CHEMTREC): 1-800-424-9300

### PRODUCT INFORMATION

Product Name/Number: PF-7035 C, FR-7035 F/K, WWMAT .055-.065 PSF, 48"

### SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

This Material Safety Data Sheet is prepared to comply with the United States Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Workplace Hazardous Materials Information System (WHMIS). Unlisted ingredients are not 'hazardous' per the OSHA standard and/or are not found on the WHMIS ingredient disclosure list.

Chemical/CAS Number	Percent	OSHA PEL	ACGIH TLV
Bisphenol A diglycidyl ether (1675-54-3) LD50: 11 gm/kg (oral, rat)	10-30% LC50: No data found	Not estab.	Not estab.
Diuron (330-54-1) LD50: 1017 mg/kg (oral, rat)	1-5% LC50: No data found	10 mg/M3	10 mg/M3
Epoxy resin	30-50%	Not estab.	Not estab.
Resorcinol diglycidyl ether (101-90-6) LD50: 2570 mg/kg (oral, rat)	1-5% LC50: No data found	Not estab.	Not estab.

See Section 16 for additional information.

### SECTION 3: HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Vapors/fumes may be irritating at application temperatures.  
Potential skin sensitizer

#### POTENTIAL HEALTH EFFECTS

Eyes: Vapors and fumes released at or above application temperatures may cause irritation.

Skin: Epoxy resins are potential skin sensitizers.

Inhalation: Vapors and fumes may cause irritation of the nose, throat and respiratory tract. Overexposure may cause headaches and dizziness.



Ingestion: Not an anticipated route of exposure. Harmful if swallowed.

Chronic: No anticipated chronic effects.

REGULATED CARCINOGEN STATUS: Unless noted below, this product does not contain regulated levels of NTP, IARC, ACGIH or OSHA listed carcinogens.

Resorcinol diglycidyl ether is listed as a potential carcinogen by NTP and IARC.

Existing Health Conditions Affected by Exposure: No known effects on other illnesses.

#### SECTION 4: FIRST AID MEASURES

If in eye: Flush immediately with water for 15 minutes. Consult a physician if irritation persists.

If on skin: Wash affected area with soap and water. Launder contaminated clothing before reuse.

If vapors inhaled: Remove subject to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician if symptoms persist.

If ingested: If person can swallow, give one glass of water or milk. Do not induce vomiting. Get immediate medical attention. Never give anything by mouth to an unconscious person.

#### SECTION 5: FIRE FIGHTING MEASURES

Flash Point/Method: > 200 degrees F Cleveland Closed Cup (93 C)

Upper Explosive Limit/Lower Explosive Limit: Not applicable

Autoignition Temperature: Not applicable

Appropriate Extinguishers: Use water spray, foam, dry chemical or carbon dioxide.

Special Fire Fighting Procedures: Persons exposed to products of combustion should wear self-contained breathing apparatus and full protective equipment.

Unusual Fire and Explosion Hazards: None known.

Hazardous Combustion Product: Incomplete combustion can yield low molecular weight hydrocarbons, carbon monoxide, hydrogen chloride, phosgene, nitrogen compounds

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Not anticipated to occur as supplied.

#### SECTION 7: HANDLING AND STORAGE

##### HANDLING INFORMATION

Wear appropriate protective equipment when working with this product.

##### STORAGE INFORMATION



Consult the Technical Data Sheet for specific storage instructions.

#### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection: Safety glasses.

Skin Protection: Prevent contact by using rubber gloves and appropriate protective clothing. Launder contaminated clothing before reuse.

Respiratory Protection: Not normally required. Use NIOSH/MSHA approved respirator if conditions warrant.

Ventilation: General dilution ventilation.

#### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid at 77F
Color:	Characteristic color
Odor:	Characteristic odor
Odor Threshold:	Not established
Weight per Gallon:	Not applicable
Specific Gravity:	Not established
% Solids by Weight:	Not established
pH:	Not applicable (as supplied)
Boiling Range:	Not applicable (as supplied)
Freezing/Melting Point:	Not applicable
Vapor Pressure:	Not established
Vapor Density:	Not applicable
Evaporation Rate:	Not applicable
Water/Oil Partition Coefficient:	Not established

VOC: Not established

#### SECTION 10: STABILITY AND REACTIVITY DATA

Stability: Stable

Incompatibility: Not established

Hazardous Decomposition:  
Nitrogen compounds  
Hydrogen chloride, phosgene

Hazardous Polymerization: Will not occur

#### SECTION 11: TOXICOLOGICAL INFORMATION

No data available

#### SECTION 12: ECOLOGICAL INFORMATION

No data available

#### SECTION 13: DISPOSAL CONSIDERATIONS

To the best of our knowledge, this product does not meet the definition of hazardous waste under the U.S. EPA Hazardous Waste Regulations 40 CFR 261. Disposal via incineration at an approved facility is recommended. Consult state, local or provincial authorities for more restrictive requirements.

#### SECTION 14: TRANSPORTATION INFORMATION



UNITED STATES DEPARTMENT OF TRANSPORTATION (DOT)

DOT Proper Shipping Name: Carbon dioxide, solid (Material packed in dry ice)  
DOT Hazard Class/I.D. Code: 9, UN1845  
DOT Label: Misc 9  
DOT Packaging Group: III

It is our opinion that the information provided here may be used to transport this product in compliance with Canadian Transportation of Dangerous Goods.

SECTION 15: REGULATORY INFORMATION

FEDERAL

Toxic Substances Control Act (TSCA)

Section 4 - Test Rule

This product contains a chemical substance that is subject to a Section 4 Test Rule.

Contact the company TSCA Compliance Manager at 651/236-5858 for the identity of the Section 4 chemical(s).

Section 8(b) - Inventory Status

This product is in compliance with the Toxic Substances Control Act's Inventory requirements.

Section 12(b) - Export Notice Requirements

This product contains a chemical substance that is currently on the EPA's Section 12(b) Export List. Within seven days of entering into a contract to export and certainly no later than the day of export, the agent of export must notify the EPA of their intent.

Contact the company TSCA Compliance Manager at 651/236-5858 for the identity of the Section 12(b) chemical(s).

SARA TITLE III

Section 313: This product contains the following toxic chemical(s) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR part 372:

Chemical Name	CAS Number	Percent
Diglycidyl resorcinol ether	101-90-6	1-5%
Diuron	330-54-1	1-5%

STATE REGULATIONS

California Proposition 65: This product contains chemical(s) known to the state of California to cause cancer (c) or reproductive (r) damage.

<0.0009% Acrylonitrile (c) 107-13-1  
listed July 1, 1987



<0.0042% Benzene (c) 71-43-2  
listed February 27, 1987  
<0.0001% Epichlorohydrin (c)(r) 106-89-8  
listed October 1, 1987  
<1.5195% Diglycidyl resorcinol ether (c) 101-90-6  
listed July 1, 1989  
<0.0082% 4-Vinylcyclohexene (c) 100-40-3  
listed May 1, 1996

WHMIS IDENTIFICATION/OTHER INTERNATIONAL REGULATIONS

d2b

SECTION 16: ADDITIONAL INFORMATION

HMIS RATING

Health-2 Flammability-1 Reactivity-0

See SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for personal protective equipment recommendations.

The information and recommendations set forth herein are believed to be accurate. Because some of the information is derived from information provided to Fiber Resin Corporation from its suppliers, and because Fiber Resin Corporation has no control over the conditions of handling and use, Fiber Resin Corporation makes no warranty, expressed or implied, regarding the accuracy of the data or the results to be obtained from the use thereof. The information is supplied solely for your information and consideration, and Fiber Resin Corporation assumes no responsibility for use or reliance thereon. It is the responsibility of the user of Fiber Resin Corporation products to comply with all applicable federal, state and local laws and regulations.



[\[Index\]](#) [\[Home\]](#)**MATERIAL SAFETY DATA SHEET**

FIBRE GLAST DEVELOPMENTS CORP.  
95 MOSIER PARKWAY  
BROOKVILLE, OH 45309  
REV 02/01

TELEPHONE: (937) 833-5200  
FAX: 937-833-6555  
**FOR CHEMICAL EMERGENCY**  
**CALL (800) 424-9300 24 HRS.**

---

**SECTION 1 - PRODUCT INFORMATION**

---

PRODUCT NAME: PART #77, Polyester Molding Resin

PRODUCT CLASS: Unsaturated Polyester Resin

---

**SECTION 2 - INGREDIENTS**

---

INGREDIENTS:	CAS #	WEIGHT MAX. %
POLYESTER RESIN	Trade Secret	53.0 - 58.0
STYRENE	100-42-5	43.0

---

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**SECTION 3 - HAZARDS IDENTIFICATION**

---

**POTENTIAL HEALTH EFFECTS:**

**EYE:** Can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.

**SKIN:** Can cause skin irritation. Prolonged or repeated contact may dry the skin. Symptoms may include redness, burning, and drying and cracking of skin, burns, and other skin damage. Passage of this material into the body through the skin is possible, but it is unlikely that this would result in harmful effects during safe handling and use.

**SWALLOWING:** Swallowing small amounts of this material during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful. This material can get into the lungs during swallowing or vomiting. This results in lung inflammation and other lung injury.

**INHALATION:** Breathing of vapor or mist is possible. Breathing aerosol and/or mist is possible when material is sprayed. Aerosol and mist may present a greater risk of injury because more material may be present in the air than from vapor alone. Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful. Symptoms usually occur at air concentrations higher than the recommended exposure limits (see Section 8.)

**SYMPTOMS OF EXPOSURE:**



Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: metallic taste, stomach or intestinal upset (nausea, vomiting, diarrhea,) irritation (nose, throat, airways,) central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness,) and other central nervous system effects, loss of coordination, confusion, liver damage.

**TARGET ORGAN EFFECTS:**

Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: mild, reversible kidney effects, effects on hearing respiratory tract damage (nose, throat, and airways,) testis damage, liver damage. Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: mild effects on color vision, effects on hearing, respiratory tract damage (nose, throat, and airways) central nervous system effects.

**DEVELOPMENTAL INFORMATION:**

This material (or a component) has been shown to cause harm to the fetus in laboratory animal studies. Harm to the fetus occurs only at exposure levels that harm the pregnant animal. The relevance of these findings to humans is uncertain.

**CANCER INFORMATION:**

In 1993, the International Agency for Research on Cancer (IARC) classified styrene in group 2B (possibly carcinogenic to humans.) IARC concluded that there was no convincing evidence for carcinogenic action of styrene in animals based on the animal studies which existed at that time. Rather, the IARC 2B listing was based on data for styrene oxide, a metabolite of styrene. Two recent lifetime studies with styrene, one in rats and one in mice, have been completed since the 1993 review. There was no increase in cancer in styrene-exposed rats. However, there was an increase in lung cancer in styrene-exposed mice. The relevance of the mouse lung cancer to humans is uncertain. Styrene exposure has not been associated with an increased incidence of cancer in workers including those in the reinforce plastics and composites plastics industries.

**OTHER HEALTH EFFECTS:**

Styrene readily reacts with low concentrations of halogens (for example, fluorine, chlorine, bromine, or iodine) to form a tear-producing substance.

**PRIMARY ROUTE(S) OF ENTRY:**

Inhalation, Skin absorption, Skin contact, Eye contact, Ingestion.

---

**SECTION 4 - FIRST AID MEASURES**

---

**EYES:**

*If symptoms develop, immediately move individual away from exposure and into fresh air.*  
Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

**SKIN:**



Remove contaminated clothing. Flush exposed area with large amounts of water. If skin is damaged, seek immediate medical attention. If skin is not damaged and symptoms persist, seek medical attention. Launder clothing before reuse.

**SWALLOWING:**

Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

**INHALATION:**

If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.

**NOT TO PHYSICIANS:**

This material is an aspiration hazard. Potential danger from aspiration must be weighed against possible oral toxicity (See Section 3 - Swallowing) when deciding whether to induce vomiting. Pre-existing disorders of the following organs (or organ systems) may be aggravated by exposure to this material: respiratory tract, skin, lung (for example, asthma-like conditions,) liver, central nervous system, male reproductive system, auditory system.

---

**SECTION 5 - FIRE FIGHTING MEASURES**

---

**FLASH POINT:** 80.0° - 90.0° F. (26.6° - 32.2° C.) SETA

**EXPLOSIVE LIMIT** (for component:) Lower 1.1 Upper 6.1%

**AUTO-IGNITION TEMPERATURE:** No data

**HAZARDOUS PRODUCTS OF COMBUSTION:**

May form: carbon dioxide and carbon monoxide, various hydrocarbons.

**FIRE AND EXPLOSION HAZARDS:**

Vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electric motors, static discharge, or other ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

**EXTINGUISHING MEDIA:**

Regular foam, water fog, carbon dioxide, dry chemical.

**FIRE FIGHTING INSTRUCTIONS:**

Wear a self-contained breathing apparatus with a full face piece operated in the positive pressure demand mode with appropriated turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS.



Polymerization will take place under fire conditions. If polymerization occurs in a closed container, there is a possibility it will rupture violently. Cool storage container with water, if exposed to fire.

NFPA RATING: Health - 2, Flammability - 3, Reactivity - 1

---

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

---

### SMALL SPILL:

Absorb liquid on vermiculite, floor absorbent, or other absorbent material and transfer to hood.

### LARGE SPILL:

Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up as been completed. Stop spill at source. Prevent from entering drains, sewers, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal.

---

## SECTION 7 - HANDLING AND STORAGE

---

### HANDLING:

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. All five gallon pails and larger metal containers including tank cars and tank trucks should be grounded and/or bonded when material is transferred.

---

## SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

---

### EYE PROTECTION:

Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. Consult your safety representative.

### SKIN PROTECTION:

Wear resistant gloves such as: polyvinyl alcohol, wear normal work clothing covering arms and legs.

### RESPIRATORY PROTECTIONS:

If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper



environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

**ENGINEERING CONTROLS:**

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

**EXPOSURE GUIDELINES:**Component:**POLYESTER RESIN**

No exposure limits established.

**STYRENE (100-42-5)**

OSHA VPEL 50.000 ppm - TWA - (see below)

OSHA VPEL 100.000 ppm - STEL

ACGIH TLV 20.000 ppm - TWA

ACGIH TLV 40.000 ppm - STEL

OSHA has formally endorsed a styrene industry proposal for a voluntary 50 ppm workplace limit on styrene. Members of the Styrene Information and Research Council (SIRC), Composites Institute (CI), Composite Fabricators Association (CFA), International Cast Polymers Association (ICPA) and National Marine Manufacturers Association (NMMA) have agreed to use either engineering controls, work practices or respiratory protection to achieve this voluntary limit for styrene.

---

**SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES**

---

**BOILING POINT** (for component): 293.4° F (145.2° C) @ 760 mmHg

**VAPOR PRESSURE** (for component): 4.500 mmHg @ 68.00° F

**SPECIFIC VAPOR DENSITY:** 3.600 @ AIR=1

**SPECIFIC GRAVITY:** 1.082 – 1.106 @ 77.00° F

**LIQUID DENSITY:** 9.100 lbs/gal @ 77.00° F (1.094 kg/l @ 25.00° C)

**PERCENT VOLATILES:** 40.0 - 45.0%

**EVAPORATION RATE :** SLOWER THAN ETHYL ETHER

**APPEARANCE:** No data.

**STATE:** LIQUID



PHYSICAL FORM: HOMOGENEOUS SOLUTION

COLOR: HAZY AMBER COLORED LIQUID

ODOR: No data.

pH: Not applicable.

VISCOSITY: 400.0 - 550.0 cps @ #2spdl @ 30 rpm

SOLUBILITY IN WATER: NEGLIGIBLE

---

### SECTION 10 - STABILITY AND REACTIVITY

---

#### HAZARDOUS POLYMERIZATION:

Product can undergo hazardous polymerization. Avoid exposure to excessive heat, peroxides and polymerization catalysts.

#### HAZARDOUS DECOMPOSITION:

May form: carbon dioxide and carbon monoxide, various hydrocarbons.

CHEMICAL STABILITY: Stable.

INCOMPATIBILITY: Avoid contact with: halogens, strong alkalis, strong mineral acids.

---

### SECTION 11 - TOXICOLOGICAL INFORMATION

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NO DATA

---

### SECTION 12 - ECOLOGICAL INFORMATION

---

NO DATA

---

### SECTION 13 - DISPOSAL CONSIDERATION

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#### WASTE MANAGEMENT INFORMATION :

Contaminated absorbent may be deposited in a landfill in accordance with local, state and federal regulations. Destroy by liquid incineration in accordance with applicable regulations.



For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Ashland Distribution Company, IC&S Environmental Services Group at 800-637-7922.

---

## SECTION 14 - TRANSPORT INFORMATION

---

DOT INFORMATION - 49 CFR 172.101

DOT DESCRIPTION: RESIN SOLUTION, 3, UN1866,III

CONTAINER/ MODE: 55 GAL DRUM/TRUCK PACKAGE

NOS COMPONENT: None

RQ (REPORTABLE QUANTITY) - 49 CFR 172.101

Product Quantity (lbs):  
2306

Component:  
Styrene Monomer

---

## SECTION 15 - REGULATORY INFORMATION

---

US FEDERAL REGULATIONS: TSCA (TOXIC SUBSTANCES CONTROL ACT )  
STATUS TSCA (UNITED STATES) The international ingredients of this product are listed.

CERCLA RQ - 40 CFR 302.4 (a)

COMPONENT:  
STYRENE

RQ (LBS)  
1000

SARA 302 COMPONENTS - 40 CFR 355 APPENDIX A: None

SECTION 311/312 HAZARD CLASS - 40 CFR 370.2 :

Immediate (X) Delayed (X) Fire (X) Reactive (X) Sudden Release of Pressure ( )

SARA 313 COMPONENTS - 40 CFR 372.65:

Section 313 Component(S):  
STYRENE

CAS Number:  
100-42-5

Max %  
43.36

OSHA PROCESS SAFETY MANAGEMENT: 29 CFR 1910  
None listed.

EPA ACCIDENTAL RELEASE PREVENTION: 40 CFR 68  
None listed.



**INTERNATIONAL REGULATIONS:****INVENTORY STATUS:**

Not determined

**STATE AND LOCAL REGULATIONS:****CALIFORNIA PROPOSITION 65:**

The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986: This product contains the following substance(s) known to the state of California to cause cancer.

**BENZENE**

The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986: This product contains the following substance(s) known to the state of California to cause reproductive harm.

**BENZENE**

Styrene, in the presence of air and high temperature or prolonged exposure to styrene/air mixture to sunlight, can react to form styrene oxide. Styrene oxide is a chemical know to the state of California to cause cancer.

**NEW JERSEY RTK LABEL INFORMATION**

Styrene Monomer - 100-42-5

**PENNSYLVANIA RTK LABEL INFORMATION**

Benzene, Ethenyl - 100-42-5

---

**SECTION 16 - COMMENTS**

---

The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with Fibre Glast Developments Corporation or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

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FAX: 937-833-6555  
**FOR CHEMICAL EMERGENCY  
CALL (800) 424-9300 24 HRS.**

---

**SECTION 1 - PRODUCT IDENTIFICATION**

---

PRODUCT NAME: PART #78 , Tooling Gel Coat

CHEMICAL FAMILY: Synthetic Organic Resin

CHEMICAL NAME: Unsaturated Polyester in Styrene Monomer

NPCA HMIS RATING: H-2 F-3 R-2

The percent by weight composition data given in Section II and X are not specifications, but are based on "target" formula values for each ingredient in the product. The data are presented as ranges for low hazard ingredients and single point values for ingredients of regulatory concern. Actual batch concentrations will vary within limits consistent with separately established product specifications.

---

**SECTION 2 - HAZARDOUS INGREDIENTS**

---

**1) SILICA, AMORPHOUS-SILICA GEL**

CAS # 112926-00-8

% BY WT: 1-5

**EXPOSURE LIMIT:**

ACGIH TLV/TWA:	10 MG/CU.M. (TOTAL DUST)
OSHA PEL/TWA;	6 MG/CU.M.
LD50, ORAL	N/A
LD50, DERMAL	N/A
LC50, INHALATION	N/A



**2) UNSATURATED POLYESTER RESIN**

CAS # PROPRIETARY

On TSCA inventory and CEPA domestic substances list.

% BY WT: 10-20

**EXPOSURE LIMIT:**

ACGIH TLV/TWA:

NONE ESTABLISHED

OSHA PEL/TWA:

NONE ESTABLISHED

**3) UNSATURATED POLYESTER RESIN**

CAS # PROPRIETARY

On TSCA inventory and CEPA domestic substances list.

% BY WT; 5-10

**EXPOSURE LIMIT:**

ACGIH TLV/TWA:

NONE ESTABLISHED

OSHA PEL/TWA:

NONE ESTABLISHED

**4) UNSATURATED POLYESTER RESIN**

CAS # PROPRIETARY

On TSCA inventory

% BY WT: 20-30

**EXPOSURE LIMIT:**

ACGIH TLV/TWA:

NONE ESTABLISHED

OSHA PEL/TWA:

NONE ESTABLISHED

**5) STYRENE MONOMER**

CAS # 000100-42-5

% BY WT: 42.0530

VAPOR PRESSURE: 4.50 MMHG @ 68° F.

**EXPOSURE LIMIT:**

ACGIH TLV/TWA:

20 PPM (SKIN) (85 MG/CU.M.)

ACGIH TLV/STEL:

40 PPM (SKIN) (170 MG/CU.M.)

OSHA PEL/TWA:

100 PPM (8 HR TWA)

OSHA PEL/CEILING:

ACCEPTABLE PEAK (5 min/3 hr) - 600 PPM max.

OSHA PEL/STEL:

ACCEPTABLE 15 MIN TWA - 200 PPM MAX

LD50, ORAL:

4.37 G/KG (RAT)

LD50, DERMAL:

&gt;5 G/KG (RABBIT)

OTHER:

LCLO: 5000 PPM/8H (RAT)



**6) METHYL METHACRYLATE**

CAS # 000080-62-6

% BY WT: 4.6500

VAPOR PRESSURE: 29.000 MMHG @ 68° F.

**EXPOSURE LIMIT:**

ACGIH TLV/TWA:	100 PPM (410 MG/CU.M.)
OSHA PEL/TWA:	100 PPM (410 MG/CU.M.)
LD50, ORAL:	7.9 G/KG (RAT)
LD50, DERMAL:	35.5 G/KG (RABBIT)
LC50, INHALATION:	>12,500 PPM/0.5H (RAT)

**7) COBALT OCTOATE 17% COBALT (CO)**

CAS # 000136-52-7

% BY WT: .1030

**EXPOSURE LIMIT:**

ACGIH TLV/TWA:	.05 MG/CU.M.) AS COBALT METAL, DUST & FUME
OSHA PEL/TWA:	.05 MG/CU.M.) AS COBALT METAL, DUST & FUME

**8) COBALT NEODECANDATE 26% COBALT (CO)**

CAS # 027253-31-2

% BY WT: .0400

**EXPOSURE LIMIT:**

ACGIH TLV/TWA:	.05 MG/CU.M.) AS COBALT METAL, DUST & FUME
OSHA PEL/TWA:	.05 MG/CU.M.) AS COBALT METAL, DUST & FUME

This product contains one or more reported carcinogens or suspected carcinogens which are noted by NTP, IARC, or OSHA-2 in the appropriate subsection above under OTHER LIMITS.

---

**SECTION 3 - PHYSICAL DATA**

---

BOILING RANGE: HIGH - N/A    LOW - 212.00 F

VAPOR PRESSURE: SEE SECTION II

THEORETICAL WT PER GALLON, CALCULATED: 9.0671 LB/GL

THEORETICAL SPECIFIC GRAVITY, CALCULATED: 1.0890



MAX. THEORETICAL VOC, CALCULATED: 4.273 LB/GAL

PHYSICAL STATE: LIQUID                      pH:    N/A

APPEARANCE: ORANGE                      Freezing Point:        N/A

ODOR: MODERATE AROMATIC              Water Solubility:    N/A

COEFFICIENT OF WATER/OIL DISTRIBUTION: N/A

STATIC ELECTRICITY EXPLOSION:    N/A

MECHANICAL IMPACT EXPLOSION:    N/A

---

#### SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

---

FLASH POINTS 73 TO 100 DEG. F

OSHA FLAMMABILITY CLASSIFICATION: CLASS IC

DOT FLAMMABILITY CLASSIFICATION: FLAMMABLE LIQUID

LOWEST CLOSED CUP FLASHPOINT: 82 DEGREES F

LOWER FLAMMABLE LIMIT IN AIR: LOWER - 1.10 % BY VOLUME

DOT SHIPPING NAME: RESIN SOLUTION, 3, UN1886, PG III

EXTINGUISHING MEDIA: Foam, carbon dioxide, dry chemical, water fog.

UNUSUAL FIRE AND EXPLOSION HAZARDS: If polymerization takes place in a container, there is possibility of violent rupture of the container. Vapors are uninhibited and may form polymers in vents or flame arresters of storage tanks resulting in stoppage of vents. Vapors may cause flash fire. Keep containers tightly closed and isolate from heat, electrical equipment, sparks and flame. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

SPECIAL FIRE FIGHTING PROCEDURES: Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible auto-ignition or explosion when exposed to extreme heat.

**\*\*ADDITIONAL TRANSPORTATION INFORMATION:**

NMFC: 46030

RESIN COMPOUNDS, LIQUID

LTL CLASS 55

---

#### SECTION 5 - HEALTH HAZARD DATA



---

**EFFECTS OF EXCESSIVE OVEREXPOSURE. PRIMARY ROUTES OF ENTRY ARE:**

**EYE CONTACT:** Irritation. Symptoms are tearing, redness and discomfort.

**SKIN CONTACT:** Irritation. Can cause defatting of skin which may lead to dermatitis.

**INHALATION:** Irritation to nose and throat. Extended or repeated exposure to concentrations above the recommended exposure limits may cause brain or nervous system depression, with symptoms such as dizziness, headache or nausea and if continued indefinitely, loss of consciousness, liver and kidney damage.

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

**INGESTION:** May cause mouth, throat, esophagus and stomach irritation, nausea, vomiting and diarrhea.

**MEDICAL CONDITIONS THAT MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT:**

Preexisting eye, skin, liver, kidney and respiratory disorders.

**EMERGENCY AND FIRST AID PROCEDURES:**

In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If affected by inhalation of vapors or spray mist, remove to fresh air. If swallowed get medical attention immediately.

This material contains no intentionally-added ingredients, covered by the California "Safe Drinking Water and Toxic Enforcement Act of 1986." (proposition 65), unless specifically stated under OTHER HEALTH HAZARDS, by individual chemical.

**OTHER HEALTH HAZARDS:**

The International Agency for Research on Cancer (IARC) has reclassified styrene as Group 2B "possibly carcinogenic to humans". This new classification is not based on new health data relating to either humans or animals, but on a change in the IARC classification system. The Styrene Information and Research Center does not agree with the reclassification and has published the following statement. "Recently published studies tracing 50,000 workers exposed to high occupational levels of styrene over a period of 45 years showed no association between styrene and cancer, no increase in cancer among styrene workers (as opposed to the average among workers), and no increase in mortality related to styrene."

An increased incidence of lung tumors was observed in mice from a recent inhalation study. The relevance of this finding is uncertain. Data from other long-term animal studies and from epidemiology studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic.

Lung effects have been observed in the mouse following repeated exposure.



---

## SECTION 6 - REACTIVITY DATA

---

STABILITY: STABLE     HAZARDOUS POLYMERIZATION: MAY OCCUR.

CONDITIONS TO AVOID: Elevated temperatures. Improper addition of promoter and/or catalyst. Avoid direct contact of MEKP catalyst with accelerator. If an accelerator such as cobalt drier is to be added, mix this accelerator with base material before adding catalyst.

INCOMPATIBILITY (MATERIALS TO AVOID): Oxidizers, peroxides, strong acids, aluminum chloride and vinyl polymers.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition or combustion can produce fumes containing organic acids, carbon dioxide, and carbon monoxide.

---

## SECTION 7 - SPILL OR LEAK PROCEDURES

---

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Remove all sources of ignition (flames, hot surface, and electrical static, or frictional sparks). Avoid breathing vapors. Ventilate area. Contain and remove with inert absorbent and non-sparking tools.

WASTE DISPOSAL METHOD: Dispose of in accordance with local, state, and federal regulations. Do not incinerate closed containers. Incinerate in approved facility.

---

## SECTION 8 - SPECIAL PROTECTION INFORMATION

---

RESPIRATORY PROTECTION: Do not breathe or ingest vapors, spray mist or dust while applying, sanding, grinding, or sawing cured product. Wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during application and other uses of this product until vapors, mists, and dusts are exhausted, unless air monitoring demonstrates vapor, mist and dust levels are below applicable limits. Follow respirator manufacturers directions for respirator use. Observe OSHA Standard 29CFR 1910.134.

VENTILATION: Provide general clean air dilution or local exhaust ventilation in volume and pattern to keep the air contaminant concentration below the lower explosion limit and below current applicable exposure limits in the mixing, application and curing areas; and to remove decomposition product during welding and flame cutting on surfaces coated with this product. In confined areas, use only with forced ventilation adequate to keep vapor concentration below 20% of lower explosion limits. Refer to OSHA Standards 29CFR 1910.94, 1910.107, 1910.108.



**NOTE:** Heavy solvent vapors should be removed from lower levels of the work area and all ignition sources (non explosion-proof motors, etc.) should be eliminated.

**PROTECTIVE GLOVES:** Use solvent impermeable gloves to avoid contact with product.

**EYE PROTECTION:** Do not get in eyes. Use safety eyewear with splash guards or side shields, chemical goggles, face shields.

**OTHER PROTECTIVE EQUIPMENT:** Avoid contact with skin. Use protective clothing. Prevent contact with contaminated clothing. Wash contaminated clothing, including shoes, before reuse.

---

## **SECTION 9 - SPECIAL PRECAUTIONS**

---

### **PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:**

Do not store above 100 deg F. Store large quantities in buildings designed to comply with OSHA 1910.106. Keep away from heat, sparks and flame. Keep containers closed when not in use and upright to prevent leakage.

**OTHER PRECAUTIONS:** Containers should be grounded when pouring. Do not take internally. Wash hands thoroughly after using and before smoking and eating. Emptied containers may retain hazardous residue and explosive vapors. Keep away from heat, sparks, and flames. Do not cut, puncture or weld on or near emptied containers. Follow all hazard precautions given in this data sheet until container is thoroughly cleaned or destroyed. If this product is blended with other components such as thinners, converter, colorants and catalysts prior to use, read all warning labels. Any mixture of components will have hazards of all components. Follow all precautions. If spraying this material keep spray booths clean. Avoid build-up of spray dust or over-spray in booths or ducts.

**KEEP OUT OF REACH OF CHILDREN      FOR INDUSTRIAL USE ONLY**

---

**ADDITIONAL ENVIRONMENTAL INFORMATION:** The VOC quantity listed in Section III is a maximum loss value. Under typical conditions only half of this amount might be lost to the atmosphere. Loss will vary due to temperature, humidity, film thickness, air movement, spray equipment/techniques, catalyzation, gel and cure rates, etc. If precise loss values are needed, it is suggested that on site testing be conducted.

---

## **SECTION 10 - SARA TITLE III INFORMATION**

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This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of SARA Title III Emergency Planning and Community Right-To-Know Act of



1986 and of 40 CFR Part 372.

This law required certain manufacturers to report on annual emissions of specified toxic chemicals and chemical categories. If you are unsure if you must report or require more information, call the EPA Emergency Planning and Community Right-To-Know Hot Line: 800-535-0202 or 202-479-2449.

COBALT NEODECANOATE 26% COBALT (CO)  
CAS # 027253-31-2

PCT BY WT: .0400

COBALT OCTOATE 17% COBALT (CO)  
CAS # 000136-52-7

PCT BY WT: .1030

METHYL METHACRYLATE  
CAS # 000080-62-6

PCT BY WT: 4.6500

STYRENE MONOMER  
CAS # 000100-42-5

PCT BY WT: 42.0530

---

### SECTION 11 - COMMENTS

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The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with Fibre Glast Developments Corporation or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

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FAX: 937-833-6555  
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**CALL (800) 424-9300 24 HRS.**

---

**SECTION 1 - PRODUCT IDENTIFICATION**

---

PRODUCT NAME: PART #69 Methyl Ethyl Ketone Peroxide

TRADE NAME: Lupersol DDM-9

CHEMICAL NAME: Methyl Ethyl Ketone Peroxide mixture in plasticizers

CHEMICAL FAMILY: Organic Peroxide - Ketone Peroxide

PRODUCT USE: Polymerization initiator

---

**SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS**

---

<u>IDENTITY</u>	<u>CAS #</u>	<u>TYPICAL %</u>	<u>OSHA HAZARD</u>
2,2,4 Trimethyl 1-1, 3-pentanediol diisobutyrate	6846-50-0	58.0	Y
Methyl Etyl Ketone Peroxides	1338-23-4	32-34	Y
Hexylene glycol	107-41-5	6.0	Y
Hydrogen peroxide	7722-84-1	0.7	N
Methyl ethyl ketone	78-93-3	1-2	Y
Water	7732-18-5	<0.7	N

**TSCA Inventory Status:**

This product is TSCA compliant. The components are either on the TSCA inventory or are exempt as impurities.

This material is classified as hazardous under Federal OSHA regulation.

The substance(s) marked with a Y in the OSHA Hazard column above, are those identified as hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

---

**SECTION 3 - HAZARDS IDENTIFICATION**

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**EMERGENCY OVERVIEW:** Clear oily liquid, ketone odor

**DANGER!**

ORGANIC PEROXIDE CAUSES EYE BURNS. MAY CAUSE BLINDNESS. MAY CAUSE SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT IRRITATION.

**POTENTIAL HEALTH EFFECTS:**

Skin contact and inhalation are expected to be the primary routes of exposure to Lupersol DDM-9. Based on its composition, Lupersol DDM-9 is anticipated to be moderately toxic if swallowed, slightly toxic if absorbed through skin, practically non-toxic if inhaled, severely irritating to skin and corrosive to eyes. Prolonged or repeated contact may cause an allergic skin reaction. Overexposure to vapor may lead to digestive disorders, narcosis and central nervous system (CNS) effects such as headache, dizziness, loss of coordination, loss of consciousness or convulsions. If swallowed, Lupersol DDM-9 may cause CNS effects as noted above, irritation of the mouth, throat and stomach and, in severe cases, death.

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**SECTION 4 - FIRST AID MEASURES**

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**EYE CONTACT:**

Immediately flush with plenty of water at least 15 minutes. Get medical attention immediately.

**SKIN CONTACT:**

Immediately wash with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Destroy contaminated shoes.

**INGESTION:**

Do not induce vomiting. Give water to drink. Get medical attention immediately. Contact a Poison Control Center. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

**INHALATION:**

Remove to fresh air. If breathing is difficult, get medical attention.

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**SECTION 5 - FIRE FIGHTING MEASURES**

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**FLASH POINT (TEST METHOD):** 71° C / 160° F (CC)

**AUTOIGNITION TEMPERATURE:** NE

**FLAMMABLE LIMITS:** Upper: NE Lower: NE



**EXTINGUISHING MEDIA:** Water spray, dry chemical, foam.

**SPECIAL FIRE FIGHTING PROCEDURES:**

Fight fire with large amounts of water from a safe distance. Use water spray to cool containers exposed to fire. Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use. After a fire, wait until the material has cooled to room temperature before initiating clean up activities.

**FIRE AND EXPLOSION HAZARDS:**

Contact with incompatible materials or exposure to temperatures exceeding SADT (Section 9) may result in a self accelerating decomposition reaction with release of flammable vapors which may autoignite.

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## **SECTION 6 - ACCIDENTAL RELEASE MEASURES**

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**IF A SPILL OR LEAK OCCURS:**

Use inert, noncombustible absorbent material. Sweep or scoop up using non-sparking tools. Wet down and dispose of immediately. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

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## **SECTION 7 - HANDLING & STORAGE**

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**HANDLING:**

Contact with incompatible materials or exposure to temperatures exceeding SADT (See Section 9) may result in a self accelerating decomposition reaction with release of flammable vapors which may autoignite.

Keep away from heat, sparks and flame.

Avoid contamination.

Use explosion proof equipment.

Use only with adequate ventilation.

Do not get in eyes, on skin or on clothing.

Do not taste or swallow.

Avoid breathing vapor or mist.

Wash thoroughly after handling.

Keep container closed.

Do not reuse container as it may retain hazardous product residue.

**STORAGE:**



Store below 100° F.(38° C) to maintain stability and active oxygen content.  
Detached storage is preferred.  
Avoid excessive heat and store out of direct sunlight in a cool well-ventilated place.  
Store away from combustibles and incompatible materials

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## SECTION 8 - EXPOSURE CONTROLS & PERSONAL PROTECTION

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### ENGINEERING CONTROLS:

Investigate engineering techniques to reduce exposures below air borne limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

### EYE PROTECTION:

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment available.

### SKIN PROTECTION:

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing promptly and wash before reuse. Wash skin thoroughly after handling.

### RESPIRATORY PROTECTION:

Avoid breathing vapors or mists. Use NIOSH approved full face organic vapor and mist respirator when airborne exposure limits are exceeded. If used, full face piece replaced need for chemical goggles or face shield. Consult respirator manufacturer if exposure limits are greater than ten times the recommended exposure limits. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full face positive-pressure self-contained air supply. Respiratory protection programs must comply with 29 CFR 1910.134.

### AIRBORNE EXPOSURE GUIDELINES FOR INGREDIENTS:

#### Hexylane Glycol

ACGIH STEL 25 ppm 121 mg/m3

#### Hydrogen Peroxide

ACGIH TWA 1 ppm 1.4 mg/m3

OSHA TWA PEL 1 ppm 1.4 mg/m3

#### Methyl Ethyl Ketone

ACGIH CEILING 885 mg/m3 300 ppm



ACGIH TWA 200 ppm 590 mg/m3  
OSHA TWA PEL 200 ppm 590 mg/m3  
Methyl Ethyl Ketone  
Peroxide  
ACGIH STEL 0.2 ppm 1.5 mg/m3

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## SECTION 9 - PHYSICAL & CHEMICAL DATA

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BOILING POINT, C: NE  
FREEZING POINT, C: NE  
SPECIFIC GRAVITY: 1.004 @ 25 C  
VAPOR PRESSURE @ 20 C: NE  
VAPOR DENSITY: NE air=1  
EVAPORATION RATE: NE Butyl acetate=1  
% VOLATILES: 98%VOC  
SADT 75C/169 F (45 lb ctn)  
SOLUBILITY IN WATER: Slight  
APPEARANCE AND ODOR: Clear oily liquid, ketone odor

SADT - Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self accelerating decomposition reaction. This reaction will generate flammable vapors which may autoignite. The length of time to generate a decomposition reaction, after the SADT has been reached or exceeded, is dependent upon how much the SADT has been exceeded and the length of time needed for the reaction exotherm (heat spike from increasing decomposition rate) to initiate a rapid decomposition reaction. Typically, SADT is inversely proportional to package size. Larger packages will have a lower SADT due to a smaller ratio of heat transfer area to volume of product.

ACTIVE OXYGEN CONTENT = 8.7 – 9.0 %

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## SECTION 10 - STABILITY & REACTIVITY

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### STABILITY:

This material is chemically unstable and should only be handled under specified conditions. See HANDLING AND STORAGE section of this MSDS for specified conditions.

### INCOMPATABILITY:

Contamination with foreign materials such as strong acids, strong alkalis, strong oxidizers, transition metal salts, reaction accelerators/promoters or reducing agents may result in a self accelerating decomposition reaction.

### HAZARDOUS DECOMPOSITION PRODUCTS:

Temperatures above the SADT can result in the release of hazardous decomposition products which are flammable and may autoignite.



**HAZARDOUS POLYMERIZATION:**

Does not occur.

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**SECTION 11 - TOXICOLOGICAL INFORMATION**

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Data on this material and/or its components are summarized below.

**Methyl ethyl ketone peroxide(s)**

Single exposure (acute) studies indicate that this material (40-60% in dimethyl phthalate) is moderately toxic to rats if swallowed (LD50 484 mg/kg), slightly toxic to rabbits if absorbed through the skin (LD50 4,000 mg/kg), practically non-toxic to rats if inhaled (4-hr LC50 17-50 mg/l), corrosive to rabbit eyes, and moderately irritating to rabbit skin (4-hr exposure, 4.5/8.0)

Following an allergic skin reaction in a paint sprayer, patch testing produced an allergic skin reaction with this material as well as other components of the paint. However, subsequent patch testing did not produce allergic skin reactions in 34 healthy subjects. Swallowing of this material was reported to cause liver injury in one case report.

Repeated oral administration of this material was reported to result in decreased body weight, mild liver and kidney injury and death in rats. Following repeated application of this material in dimethyl phthalate to the skin of rats and mice, severe skin damage and animal deaths (only at the highest dose levels) were the primary effects. Spleen and bone marrow changes considered secondary to the severe skin damage were noted in animals at the high doses. Higher doses applied to rat and mouse skin for a shorter period of time produced similar effects. Long-term repeated skin application of this material in dimethyl phthalate was reported to enhance skin tumor production in mice irradiated with UVB. This material has produced genetic changes in standard tests using bacterial or animal cells. However, no genetic changes occurred in a standard test using animals.

**2,2,4-Trimethyl-1,3-Pentanediol Diisobutyrate**

Single exposure (acute) studies indicate that this material is no more than slightly toxic to rats if swallowed (LD50>3200 mg/kg), practically non-toxic to guinea pigs if absorbed through the skin (LD50>20ml/kg) or rats if inhaled (6-hr LC50> 5.3 mg/l), and slightly irritating to rabbits eyes and to guinea pig skin.

No skin allergy was observed in guinea pigs following repeated exposure. Increased liver weights, which were probably adaptive changes due to the induction of drug metabolizing enzymes in these tissues, were observed in rats or dogs fed up to 1% in their feed for up to 103 days. This material is eliminated in the excreta of rats following a single oral dose with little or no retention in the tissues or organs.

**Hexylene Glycol**

Single exposure (acute) studies indicate that this material is slightly toxic to rats, rabbits, mice and guinea pigs if swallowed (LD 50 2,800-4,700 mg/kg), practically non toxic to rabbits if absorbed through skin (LD50 12,300 mg/kg), severely irritating to rabbits eyes, and



moderately irritating to rabbit skin. No deaths occurred in rats exposed to about 160 ppm for 8 hours.

Skin application of 50% of this material in water showed only minimal irritation in human volunteers, while repeated application of consumer products containing up to 1% showed no irritant or sensitizing effects in humans. Patch tests have shown sensitization responses in individuals working with cutting oils containing this material. Rats and rabbits exposed to 0.7 mg/l for 9 days showed no adverse effects. This material in the diet at up to 150mg daily for 4 months produced no adverse effects on growth, behavior or fertility in rats. Changes in the kidney were noted at 200 mg/day. No genetic changes were observed in tests using bacteria or animals cells.

#### Methyl Ethyl Ketone

Single exposure (acute) studies indicate that this material is no more than slightly toxic to rats if swallowed (LD50 2700-5600 mg/kg), practically non-toxic to rabbits if absorbed through the skin (LD50, 5000-13000 mg/kg) or rats if inhaled (4-hr LC50 11,700ppm), and moderately irritating to rabbit eyes and skin.

Repeated exposure of humans to controlled skin contact studies with this material produced no skin irritation or skin allergy. Central nervous system (CNS) effects and peripheral neuropathy have been reported in the industrial setting following exposures to mixtures containing this material; however these mixtures contained other solvents known to cause central nervous system injury.

Following repeated inhalation exposure, slight changes in organ weights and blood chemistry were reported in rats. No evidence of nervous system injury following long-term inhalation exposure to this material has been observed in rats chickens mice or cats. Animal studies have shown this material to increase the severity of, or shorten the onset of, irreversible nervous system effects due to n-hexane and methyl butyl ketone, as well as effects of chloroform and carbon tetrachloride. This material did not increase the incidence of tumors in long-term skin application studies in mice. A small number of major birth defects were reported in rats exposed to this material by inhalation during pregnancy at a level (3000 ppm) which produced toxic effects in the offspring, but not in the mothers. However, no birth defects were found in a second repeat study with rats using very similar exposure conditions, while adverse effects were noted in the mothers and their offspring. In mice exposed to 3000ppm of this material by inhalation during pregnancy, toxic effects were observed in the mothers (mild effects only) and their offspring. This material has generally produced no genetic changes in standard tests using animals and animal or bacterial cells. A positive response was reported in one assay using yeast cells.

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## SECTION 12 - ECOLOGICAL INFORMATION

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### ECOTOXICOLOGICAL INFORMATION:

Data on this material and/or its components are summarized below.

#### METHYL ETHYL KETONE PEROXIDE(S)

This material is slightly toxic to guppies (96-hr LC50 44.2 mg/l).



**2,2,4-TRIMETHYL-1, 3-PENTANEDIOL DIISOBUTYRATE:**

This material is no more than moderately toxic to fathead minnow, ramshorn snails, aquatic earthworms, sideswimmers, pill bugs and flatworms (96-hr LC50s > 1.55mg/l), and daphnids (96-hr EC50 > 1.46 mg/l).

**HEXYLENE GLYCOL:**

Hexylene glycol has been reported to be practically non-toxic to a variety of aquatic organisms by acute toxicity testing. Freshwater fish including rainbow trout, bluegill sunfish, fathead minnow, mosquito fish, goldfish and channel catfish had LC50 values in excess of 1,000 mg/l and generally were in the range of 8,000 to 10,000 mg/l. Aquatic invertebrates such as Daphnia and crayfish had EC50 values greater than 2,800 mg/l.

**METHYL ETHYL KETONE (MEK):**

MEK is practically non-toxic to goldfish, brine shrimp, Daphnia magna, fathead minnow, mosquito fish, bluegill sunfish and golden orfe (LC50s >1,000 mg/l). MEK inhibits fungal growth and is reported to be bacteriostatic to several microorganisms (Escherichia coli, Salmonella typhimurium, Staphylococcus aureus, Leuconostoc citrovorum and Streptococcus thermophilus) at levels of 10-100 mg/l. Growth inhibition has also been reported for freshwater algae at levels ranging from 120 mg/l (blue green algae) to 4300 mg/l (green algae).

**CHEMICAL FATE INFORMATION:****METHYL ETHYL KETONE PEROXIDE STRUCTURES (MEKP):**

MEKP was reported to be readily biodegradable in a closed bottle system. An EC50 of 16 mg/l was reported in an activated sludge respiration inhibition test.

**2,2,4-TRIMETHYL-1, 3-PENTANEDIOL DIISOBUTYRATE:**

In a 28-day modified Sturm Test, 2,2,4-trimethyl-1, 3-pentanediol diisobutyrate was found to undergo 32-59% degradation to CO<sub>2</sub>. The bioconcentration factor without metabolism was estimated to be 670 and with metabolism 1-40. The log Pow is estimated to be 4.1.

**HEXYLENE GLYCOL:**

Chemical oxygen demand (COD) and biological oxygen demand (BOD) indicated that hexylene glycol is readily biodegraded.

**METHYL ETHYL KETONE (MEK):**

Extensive data suggests that MEK is readily biodegradable. It is non-toxic to sludge microorganisms at concentrations up to 800 ug/l.

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**SECTION 13 - DISPOSAL CONSIDERATIONS**

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Dispose in accordance with federal, state and local regulations. Dilution followed by incineration is the preferred method. Dilution ratio of 10:1 in a clean, compatible, combustible solvent (i.e. Fuel Oil #2, mineral oil) will reduce reactivity hazard during incineration and transportation.



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## SECTION 14 - TRANSPORT INFORMATION

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DOT PROPER SHIPPING NAME: Organic Peroxide Type D, Liquid

TECHNICAL SHIPPING NAME: Methyl Ethyl Ketone Peroxide(s), <=45%

DOT HAZARD CLASS: 5.2

UN NUMBER: UN3105

PACKING GROUP: II

PRODUCT RQ (LBS): Methyl Ethyl Ketone Peroxide(s) = 10 lbs

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## SECTION 15 - REGULATORY INFORMATION

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### SARA HAZARD CLASSIFICATION:

Immediate (Acute) Health: yes

Delayed (Chronic) Health: no

Sudden Release of  
Pressure: no

Reactive: yes

Fire: yes

The components of this product are either on the TSCA Inventory list or exempt as impurities.

### SARA TITLE III, SECTION 302:

This product does not contain any chemicals currently on the Extremely Hazardous Substance List, Section 302, SARA Title III, See section 2 for further details regarding concentrations and registry numbers  
Hydrogen Peroxide

### SARA TITLE III, SECTION 313:

This product does contain chemicals which are defined as toxic Chemicals under and subject to the reporting requirements of, Section 313 of Title III of the Superfund Ammendments and Reauthorization Act of 1986 and 40 CFR Part 372. See Section 2.  
Methyl Ethyl Ketone

Ingredient Related Regulatory Information:



SARA Reportable Quantities

	<u>CERCLA</u>	<u>RQ</u>	<u>SARA</u>	<u>TPQ</u>
Hexylene glycol	NE			
Hydrogen Peroxide	NE		1000	
Water	NE			
Methyl ethyl ketone	5000 lbs			
Methyl ethyl ketone peroxide(s)	10 lbs			
2,2,4-Trimethyl-1,3-pentanediol diisobutylate	NE			

**CALIFORNIA PROPOSTION 65:**

This product does not contain any chemicals currently listed on the California List of known Reproductive Toxins.

**PENNSYLVANIA RIGHT-TO-KNOW**Hazardous Substance List

This product contains:

Methyl Ethyl Ketone Peroxides

Hexylene glycol

Hydrogen peroxide

Methyl ethyl ketone

which are listed on the Pennsylvania Hazardous Substance List.

**PENNSYLVANIA ENVIRONMENTAL HAZARD**Environmental Hazardous Substance List

This product contains:

Methyl Ethyl Ketone Peroxides

Hydrogen peroxide

Methyl ethyl ketone

which are listed on the Pennsylvania Environmental Hazardous Substance List.

**PENNSYLVANIA RIGHT-TO-KNOW**Special Hazardous Substance List

This product does not contain any chemicals currently on the Pennsylvania Special Hazardous Substance List, above the OSHA de minimis concentration.

**MASSACHUSETTS RIGHT-TO-KNOW**This product contains:

Methyl Ethyl Ketone Peroxides

Hydrogen peroxide

Methyl ethyl ketone

which are listed on the Massachusetts Hazardous Substance List.

**NEW JERSEY RIGHT-TO-KNOW**



This product contains:

Methyl Ethyl Ketone Peroxides 1338-23-4

Hexylene glycol 107-41-5

Hydrogen peroxide 7722-84-1

Methyl ethyl ketone 78-93-3

which are listed on the New Jersey Hazardous Substance List.

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## SECTION 16 - COMMENTS

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The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with Fibre Glast Developments Corporation or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

Key:

NE- Not Established    NA- Not Applicable

Miscellaneous

Additional Incompatibility Data:

Rust, copper, and brass are not compatible with MEK peroxide. 316 stainless steel, glass, polyethylene, polytetrafluoroethylene and polypropylen are preferred materials for contact with MEK peroxides. Acetone may react with residual hydrogen peroxide to form insoluble shock-sensitive acetone peroxide crystals.

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FIBRE GLAST DEVELOPMENTS CORP.  
95 MOSIER PARKWAY  
BROOKVILLE, OH 45309  
REV 07/01

TELEPHONE: (937) 833-5200  
FAX: 937-833-6555  
**FOR CHEMICAL EMERGENCY  
CALL (800) 424-9300 24 HRS.**

**SECTION 1 - PRODUCT INFORMATION**

PRODUCT NAME(s): PART #223 – 18 Ounce Woven Roving

CHEMICAL NAME & SYNONYMS: Continuous Filament Fiber Glass

CHEMICAL FORMULA: E-Glass

COLOR: Yellow-White to White

ODOR: No Odor

**SECTION 2 - COMPOSITION OF INGREDIENTS**

COMMON NAME	CHEMICAL NAME	CAS #	WT %
Fiber Glass Continuous Filament (non respirable)*	Fibrous Glass	65997-17-3	98-100
Respirable Particulate			>98
Respirable Particulate with fiber- like dimensions (glass shards)			<1
Size	Size	mixture	<0.002
			0-2

NOTE: \* See Section 8 of MSDS for exposure limit data for these ingredients.

**SECTION 3 - HAZARDS IDENTIFICATION**

EMERGENCY OVERVIEW: No unusual conditions are expected from this product.

PRIMARY ROUTE(S) OF ENTRY: Inhalation, Skin, Eye

POTENTIAL HEALTH EFFECTS:

ACUTE: (short term) Fiber glass continuous filament is a mechanical irritant. Breathing dusts and fibers may cause short term irritation of the mouth, nose and throat. Skin contact with dust and fibers may cause itching and short term irritation. Eye contact with dust and fibers may



cause short term mechanical irritation. Ingestion may cause short term mechanical irritation of the stomach and intestines. See Section 8 for exposure controls.

**CHRONIC:** (long term) There is no known chronic health effects connected with long term use or contact with this product. In laboratory test of a different product with comparable composition and durability, animals breathing very high concentrations of respirable fibers on a long-term basis developed fibrosis, lung cancer and mesothelioma. See Section 11 of MSDS for more toxicological data.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Respiratory or skin conditions that are aggravated by mechanical irritants may be at an increase risk for worsening from exposure to this product.

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#### **SECTION 4 - FIRST AID MEASURES**

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**EYE CONTACT:**

Flush eyes with running water for at least 15 minutes. If irritation persists, seek medical attention.

**SKIN CONTACT:**

Wash with mild soap and running water. Use a washcloth to help remove fibers. To avoid further irritation, do not rub or scratch affected areas. Rubbing or scratching may force fibers into skin. Seek medical attention if irritation persists.

**INHALATION:** Move person to fresh air. If irritation persists, seek medical attention.

**INGESTION:** Ingestion of this material is unlikely. If it does occur, watch the person for several days to make sure that intestinal blockage does not occur.

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#### **SECTION 5 - FIRE FIGHTING MEASURES**

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**FLASH POINT:** NONE

**FLAMMABLE LIMITS:** NONE

**AUTO IGNITION TEMPERATURE:** NOT APPLICABLE

**EXTINGUISHING MEDIA:** Water, Foam, CO<sub>2</sub> or Dry Chemical

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Not applicable.

**FIRE FIGHTING PROCEDURES:**

Use self-contained breathing apparatus (SCBA) and full bunker gear in a sustained fire.



**SPECIAL EXPOSURE HAZARDS FROM FIRE:**

Primary combustion products are carbon monoxide, carbon dioxide and water. Other undetermined compounds could be released in small quantities.

---

**SECTION 6 - ACCIDENTAL RELEASE MEASURES**

---

Releases of this product to the land, water, and air may require reporting to federal, state or local authorities.

**LAND SPILL:**

Scoop up material and put into suitable container for disposal as a non-hazardous waste.

**WATER SPILL:**

This material will sink and disperse along the bottom of waterways and ponds. It can not easily be removed after it is waterborne; however, the material is non-hazardous in water.

**AIR RELEASE:**

This material will settle out of the air. If concentrated on land it can then be scooped up for disposal as a non-hazardous waste.

---

**SECTION 7 - HANDLING AND STORAGE**

---

STORAGE TEMPERATURE: Not Applicable

STORAGE PRESSURE: Not Applicable

GENERAL: No special storage or handling procedures are required for this material.

---

**SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION**

---

<b>Ingredient</b>	<b>OSHA PEL (8-hr TWA)</b>	<b>ACGIH TLV 8-hr TWA)</b>
Fiber Glass Continuous Filament		
Nonrespirable fibers and particulate	15 mg/m <sup>3</sup> Total Dust	5 mg/m <sup>3</sup> Inhalable Fraction
Respirable particulate	5 mg/m <sup>3</sup> Respirable Dust	3 mg/m <sup>3</sup> PNOC
Respirable particulate with fiber like dimensions (glass shards)	None Established	1 fiber/cc
Size	None Established	None Established

PNOC= Particles not otherwise classified

As manufactured continuous filament glass fibers are not respirable. Continuous filament glass



products that are chopped, crushed or severely mechanically processed during manufacturing or use may contain a very small amount of respirable particulate, some of which may be glass shards.

**VENTILATION:**

General dilution ventilation and/or local exhaust ventilation should be provided as necessary to maintain exposures below occupational exposure limits.

**RESPIRATORY PROTECTION:**

A properly fitted NIOSH/MSHA approved disposable dust respirator such as the 3M model 8210 (formerly 8710) or model 8271 (formerly 9900) in high humidity environments, or equivalent should be used when: high dust levels are encountered; the level of glass fibers in the air exceeds the occupational exposure limits; or if irritation occurs. Use respiratory protection in accordance with your company's respirator protection program, local regulations and OSHA regulations under 29 CFR 1910.134

**SKIN PROTECTION:**

Loose fitting long sleeved shirt that covers the base of the neck, long pants and gloves. Skin irritation is known to occur chiefly at pressure points such as around neck, wrist, waist and between fingers.

**EYE PROTECTION:**

Safety glasses, goggles or face shield.

**WORK AND HYGIENIC PRACTICES:**

Handle using good industrial hygiene and safety practices. Avoid unnecessary exposures by using adequate local exhaust ventilation. Remove material from skin and eyes after contact. Remove material from clothing using vacuum equipment (never use compressed air.) Always wash work clothes separately from other clothing. Wipe out the washer or sink to prevent loose glass fibers from getting on other clothing. Keep the work area clean of dusts and fibers released during processing or fabrication. Use vacuum equipment to clean up product. Avoid sweeping or using compressed air as these techniques re-suspend dusts and fibers into the air. Have access to safety showers and eye wash stations.

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**SECTION 9 - STABILITY AND REACTIVITY**

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**STABILITY:** Stable

**CONDITIONS TO AVOID:** None Known

**INCOMPATIBILITY (MATERIALS TO AVOID):** None Known

**HAZARDOUS POLYMERIZATION:** Will not occur.

**HAZARDOUS DECOMPOSITION PRODUCTS:**

Sizings or binders may decompose in a fire. See Section 5 of MSDS for combustion products statement.



## SECTION 10 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Solid

ODOR TYPE: None

pH: Not applicable

BOILING POINT: Not applicable

FREEZING POINT: Not applicable

SPECIFIC GRAVITY: 2.6 (water = 1)

PHYSICAL STATE: Solid

VAPOR PRESSURE (mm Hg @ 20° C: Not applicable

VAPOR DENSITY (Air=1): Not applicable

EVAPORATION RATE (n-Butyl Acetate=1): Not Applicable

VISCOSITY: Not Applicable

SOLUBILITY IN WATER: Insoluble in water.

## SECTION 11 - TOXICOLOGICAL INFORMATION

### CARCINOGENICITY:

The table below indicates whether or not each agency has listed each ingredients as a carcinogen.

INGREDIENT	ACGIH	IARC	NTP	OSHA	97/6
Fiber Glass Continuous Filament <sup>(a)</sup>	A4	3	NO	NO	NO
Size	No	No	No	No	No

ACGIH: A4 Not Classifiable as a Human Carcinogen

IARC: Not Classifiable with respect to Human Carcinogenicity

(a) includes: Nonrespirable glass particulate. Respirable glass particulate and Respirable particulate with fiber-like dimensions (glass shards).



INGREDIENT	LD <sub>50</sub> Oral(g/kg)	LD <sub>50</sub> Dermal(g/kg)	LC <sub>50</sub> Inhalation(ppm. 8hrs.
Fiber Glass Continuous Filament (a)	Not Available	Not Available	Not Available
Size	Not Available	Not Available	Not Available

#### FIBER GLASS CONTINUOUS FILAMENT:

The International Agency for Research on Cancer (IARC) in June, 1987, categorized fiber glass continuous filament as not classifiable with respect to human carcinogenicity (Group 3). The evidence from human as well as animal studies was evaluated by IARC as insufficient to classify fiber glass continuous filament as a possible, probable, or confirmed cancer causing material.

The American Conference of Governmental Industrial Hygienists (ACGIH) A4 classification, not classifiable as a human carcinogen, for respirable continuous filament glass fibers is based on inadequate data in terms of its carcinogenicity in humans and/or animals.

For respirable continuous filament glass fibers, a TLA-TWA of 1 fiber/cc was adopted to protect workers against mechanical irritation. The TLV-TWA of 5 mg/m<sup>3</sup> was adopted for nonrespirable glass filament fiber, measured as inhalable dust, to prevent mechanical irritation of the upper respiratory tract.

**NOTE:** There are no known chronic health effects connected with long term use or contact with these products.

Products that are chopped, crushed or severely mechanically processed during manufacture or use may contain a very small amount of respirable glass fiber-like fragments. NIOSH defines "respirable fibers" as greater than 5 microns in length and less than 3 microns in diameter with an aspect ratio of greater than or equal 5:1 (length-to-width ratio).

#### CHRONIC STUDY IN ANIMALS:

A laboratory test was conducted with a different product (special application glass fiber) with comparable composition and durability. Test animals breathing very high concentrations of respirable fibers on a long-term basis developed fibrosis, lung cancer and mesothelioma.

About 23% of the rats (n=43) exposed to 1022 f/cc for 5 hrs/day, 7 days/week for 52 weeks developed lung tumor (adenoma and carcinoma). Five percent (5%) of the unexposed control group (n=38) developed lung tumors (adenoma and carcinoma).

Five percent (5%) of the rats in the exposed group developed mesothelioma and 12.5% developed advanced fibrosis. None of the rats in the unexposed control group developed mesothelioma and 0.6% developed advanced fibrosis.

A second group of rats was exposed to a similar concentration of asbestos (respirable amosite fibers) for 5 hours/day, 7 days/week for 52 weeks. 38% of the rats developed lung tumors (adenoma and carcinoma) and 5% developed mesothelioma, 14.5% developed advanced fibrosis.

Importantly, this result, that is similar disease rates for special application fiber and amosite asbestos had been predicted in a 1996 scientific paper (Inhal. Tox. 8:323.343.1996 ref). That paper specifically



stated that in rats all fibers which were durable enough to remain in a rat lung for two (2) years or more would produce the same disease rates if the exposures were the same. While the special application fiber is much less durable than asbestos, it is stable enough to remain in the rat lung for more than two (2) year time period. The results of the current study are therefore not unexpected, and they do not indicate that similar disease rates would be seen in longer lived species or humans, exposed to these fibers.

---

## SECTION 12 - ECOLOGICAL INFORMATION

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Fiber glass is generally considered to be an inert solid waste, and no special precautions should be taken in case it is released or spilled. These products do not contain, nor are manufactured with, Class I or Class II Ozone-Depleting Chemicals (CFCs) identified in the Clean Air Act Amendment, 1990 List of Ozone Depleting Chemicals.

---

## SECTION 13 - DISPOSAL CONSIDERATIONS

---

This material is not expected to cause harm to animals, plants or fish.

RCRA HAZARD CLASS: Non-hazardous

---

## SECTION 14 - TRANSPORT INFORMATION

---

DOT SHIPPING NAMES: Not Regulated

HAZARD CLASS OR DIVISION: None

SECONDARY: None

IDENTIFICATION NO: None

PACKING GROUP: None

LABEL(S) REQUIRED (if not excepted): None

PACKAGING EXCEPTIONS: None

SPECIAL PROVISIONS: None

BULK PACKAGING: None

EPA HAZARDOUS SUBSTANCES: None

RQ: None

QUANTITY LIMITATIONS: Passenger Aircraft: None Cargo Aircraft: None

MARINE POLLUTANTS: None

FREIGHT DESCRIPTION: None

HAZARDOUS MATERIAL SHIPPING DESCRIPTION: None

## TRANSPORTATION OF DANGEROUS GOODS - CANADA



PROPER SHIPPING NAME: Not Regulated

IMO CLASSIFICATION: None

TDG HAZARD CLASSIFICATION: (Primary): None (Secondary): None

ICAO/IATA CLASSIFICATION: None

PACKING GROUP: None

PRODUCT IDENTIFICATION NUMBER: None

EMERGENCY TEMPERATURE: None

SCHEDULE XII QUANTITY RESTRICTION: None

CONTROL TEMPERATURE: None

REPORTABLE QUANTITY FOR US SHIPMENTS: None

**IATA PACKING INSTRUCTION:**

Passenger/Cargo: None

Cargo Only: None

Limited Quantity: None

**MAXIMUM NET QUANTITY PER PACKAGE:**

Passenger/Cargo: None

Cargo Only: None

Limited Quantity: None

SPECIAL PROVISIONS: None

---

**SECTION 15 - REGULATORY INFORMATION**

---

TSCA STATUS: Each ingredient is on the inventory.

NSR STATUS (CANADA): Each ingredient is on DSL.

**SARA TITLE III: HAZARD CATEGORIES**

Acute Health: Yes

Chronic Health: No

Fire Hazard: No

Pressure Hazard: No

Reactivity Hazard: No

**REPORTABLE INGREDIENTS**

SEC. 302/304: None

SEC. 313: None

CALIFORNIA PROPOSITION 65: No ingredient is listed

CLEAN AIR ACT: No ingredient is listed



WHMIS (CANADA): STATUS: Not Controlled

WHMIS CLASSIFICATION(S): None

---

## SECTION 16 - OTHER INFORMATION

---

### HMIS AND NFPA HAZARD RATING:

CATEGORY	HMIS	NFPA
Acute Health	1	1
Flammability	0	0
Reactivity	0	0

NFPA UNUSUAL HAZARDS: None

HMIS PERSONAL PROTECTION: To be supplied by user depending upon use.

---

## SECTION 17 - COMMENTS

---

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with Fibre Glast Developments Corporation or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

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[\[Index\]](#) [\[Home\]](#)**MATERIAL SAFETY DATA SHEET**

FIBRE GLAST DEVELOPMENTS CORP.  
95 MOSIER PARKWAY  
BROOKVILLE, OH 45309  
REV 07/01

TELEPHONE: (937) 833-5200  
FAX: 937-833-6555  
**FOR CHEMICAL EMERGENCY  
CALL (800) 424-9300 24 HRS.**

**SECTION 1 - PRODUCT IDENTIFICATION**

**PRODUCT NAME:** PART #241, 243, 244, 245, 247, 254, 259, 262, 271 Woven Fiberglass Fabrics

**DESCRIPTION:** Woven textile product used for reinforcement in various resin systems.

**PRODUCT IDENTIFICATION:** F3 and F16 Finish Fiberglass

**CHEMICAL FAMILY:** Woven fiberglass fabric using E-Glass or S2-Glass fibers with a Chromium ( $\text{Cr}^{3+}$ ) Methacrylate finish applied.

**SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS**

<u>COMPONENT:</u>	<u>% BY WEIGHT:</u>	<u>CAS #:</u>	<u>ACGIH (TLV)</u>	<u>OSHA (PEL)</u>
Fiberglass Fiber				
Synthetic			1f/cc	15 mg/m <sup>3</sup> (Total)
Vitreous Continuous Filament	98.8 - 100.00	65997-17-3	5 mg/m <sup>3</sup> (Inhalable)	5 mg/m <sup>3</sup> (Respirable)

This product is not classified as a hazardous chemical as defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200

Where specific exposure limits for component dusts are not established, the levels provided for Total/Inhalable and Respirable dust reflect the classification of particulates not otherwise regulated/classified by OSHA and ACGIH.

**SECTION 3 - HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW:**

No unusual conditions are expected from this product.

**APPEARANCE AND ODOR:**

White fibers, with greenish tint, woven into fabric of varying weight, width and thickness, depending on style, with a finish applied, with no distinctive odor. There may be a sealant applied to the edges of slit (less than full width) fabrics to prevent fibers from becoming unwoven.



**STATEMENT OF HAZARD:**

Caution! May cause temporary mechanical irritation of eyes, skin or upper respiratory tract.

**PRIMARY ROUTES OF EXPOSURE:**

Eye: Yes

Skin: Yes

Inhalation: Yes

Ingestion: No

**HMIS RATING:**

Health: 1

Flammability: 0

Reactivity: 0

Special: None

**POTENTIAL HEALTH EFFECTS:**

Eye: May cause mechanical irritation to the eyes.

Skin: May cause mechanical irritation to the skin and possible dermatitis.

Inhalation: May cause mechanical irritation to the upper respiratory tract.

Ingestion: Very unlikely. If a large amount is swallowed, seek medical attention.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:**

Chronic respiratory skin conditions that are aggravated by mechanical irritants may be at increased risk from exposure to this product.

**CARCINOGENIC INFORMATION:**

None of the components present in this material at concentrations equal to or greater than 0.1% are listed or regulated by NTP, OSHA or ACGIH as a carcinogen, but Glass Filament is listed by IARC as Group 3 (not classifiable as to human carcinogen).

---

**SECTION 4 - PHYSICAL DATA**

---

**APPEARANCE AND ODOR:**

White fibers, with greenish tint, woven into fabric of varying weight, width and thickness, depending on style, with a finish applied, with no distinctive odor. There may be a sealant applied to the edges of slit (less than full width) fabrics to prevent fibers from becoming unwoven

MELTING POINT: >1292°F/>700°C

SPECIFIC GRAVITY (Water=1): 2.60

pH OF UNDILUTED PRODUCT: Not Determined



VOLATILE [PERCENT (%) BY WEIGHT]: 0

PERCENT (%) VOC: Not Determined

SOLUBILITY IN WATER: Insoluble

---

### SECTION 5 - FIRE HAZARD DATA

---

FLASH POINT: Not applicable

EXTINGUISHING MEDIA: Use water spray, dry chemical or CO<sub>2</sub> to extinguish fires.

SPECIAL FIRE HAZARDS: Avoid exposure through use of a self-contained, positive-pressure breathing apparatus.

UNUSUAL FIRE HAZARDS: None

FLAMMABLE LIMITS: Not applicable

---

### SECTION 6 - REACTIVITY DATA

---

STABILITY: Stable under normal handling and storage conditions.

**PRODUCTS EVOLVED FROM HEAT OF COMBUSTION OR DECOMPOSITION:**

The products of combustion and decomposition depend on other materials present in the fire and the actual conditions of the fire. Burning will decompose the finish and release oxides of carbon, nitrogen and silicon, water, ammonia, hydrogen chloride, traces of incompletely burned carbon products and other unidentified gases and vapors which may be toxic. Avoid inhalation.

INCOMPATIBLE MATERIALS: None

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions of use. Rapid heating of the product in bulk may produce an uncontrolled exothermic reaction which may char and decompose the finish, generating unidentified gases and vapors which may be toxic. Avoid inhalation.

---

### SECTION 7 - HEALTH HAZARD DATA

---

PRIMARY ROUTES OF EXPOSURE:



Eye: Yes  
Skin: Yes  
Inhalation: Yes  
Ingestion: No

HMIS RATING:  
Health: 1  
Flammability: 0  
Reactivity: 0  
Special: None

POTENTIAL HEALTH EFFECTS:

Eye: May cause mechanical irritation to the eyes.

Skin: May cause mechanical irritation to the skin and possible dermatitis.

Inhalation: May cause mechanical irritation to the upper respiratory tract.

Ingestion: Very unlikely. If a large amount is swallowed, seek medical attention.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Chronic respiratory skin conditions that are aggravated by mechanical irritants may be at increased risk from exposure to this product.

CARCINOGENIC INFORMATION:

None of the components present in this material at concentrations equal to or greater than 0.1% are listed or regulated by NTP, OSHA or ACGIH as a carcinogen, but Glass Filament is listed by IARC as Group 3 (not classifiable as to human carcinogen).

---

## SECTION 8 - SPECIAL PROTECTION REQUIRED

---

EYE/FACE PROTECTION:

Avoid eye contact. Wear coverall goggles, as necessary, to prevent irritation, if airborne dust or fibers are present.

SKIN PROTECTION:

Wear protective clothing such as loose fitting, long sleeved shirt that covers to the base of the neck, long pants and gloves, as necessary, to prevent irritation. Skin irritation is known to occur primarily at pressure points such as around the neck, wrist, waist and between the fingers.

RESPIRATORY PROTECTION:

Not ordinarily required. If sufficient dust or fibers are generated during use of the product, use a NIOSH approved dust respirator.

VENTILATION:

Use local exhaust sufficient to control fibers and dust generated. If exhaust ventilation is not available or is inadequate, use a NIOSH approved dust respirator.



**GENERAL HYGIENE RECOMMENDATIONS:**

Before eating, drinking, smoking or using toilet facilities, wash face and hands thoroughly with soap and water. Remove any contaminated clothing and launder before reuse. Use vacuum equipment to remove fibers and dust from clothing and work areas. Compressed air is not recommended.

---

**SECTION 9 - CONTAINMENT AND DISPOSAL**

---

**CONTAINMENT AND CLEAN-UP:**

Avoid contact with skin, eyes or clothing (See Section 8). Clean up material, put into a suitable container and dispose of properly (See Section 13).

**DISPOSAL:**

Material for disposal should be placed in appropriate sealed containers to avoid potential human and environmental exposure. It is the responsibility of the generator to comply with all federal, state, provincial and local laws and regulations. We recommend that you contact an appropriate waste disposal contractor and environmental agency for relevant laws and regulations. Under the US Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets relevant waste classification.

---

**SECTION 10 - SPECIAL PRECAUTIONS**

---

**SHIPPING:** Not regulated by DOT; not classified by TDG.

**STORAGE:** Store in a cool, dry area. Maintain sealed against contamination from dirt and moisture.

---

**SECTION 11 - TOXICOLOGICAL INFORMATION**

---

**COMPONENT TOXICITY DATA:****Median Lethal Dose (Species)**

Oral (LD<sub>50</sub>): Not Determined

Inhalation (LC<sub>50</sub>): Not Determined

Dermal(LD<sub>50</sub>): Not Determined

**Irritation Index, Estimation of Irritation (Species):**

Skin: Not Determined

Eye: Not Determined

Inhalation: Not Determined



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**SECTION 12 - ECOLOGICAL INFORMATION**

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No ecological data has been determined.

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**SECTION 13 - REGULATORY INFORMATION**

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**SARA TITLE III:**

Section 302/304 Extremely Hazardous Substance: None

Section 311 Hazardous Categorization: None

Section 313 Toxic Chemicals None

**CERCLA:**

Section 102(A) Hazardous Substance: None

**RCRA INFORMATION:**

Currently, this product is not listed in federal hazard waste regulations 40 CFR, Part 261.33 paragraphs (e) or (f), i.e. chemical products that are considered hazardous if they become waste. State or Local hazardous waste regulations may also apply if they are different from federal regulation. It is the responsibility of the user of the product to determine at the time of disposal, whether the product meets relevant waste classification and to assure proper disposal.

**WHMIS (Canada):**

Classification: None

Ingredient Disclosure List: Fibrous glass (CAS #65997-17-3)

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986:**

Warning! The state of California has determined that the following listed component chemicals in this product may cause cancer, birth defects or other reproductive harm: None

**TSCA INFORMATION:**

All components of this product are either listed or are not required to be listed in the EPA TSCA inventory.

**OZONE DEPLETION INFORMATION:**

This product does not contain or is not manufactured with ozone depleting substances as identified in Title VI Clean Air Act "Stratospheric Ozone Protection" and the regulations set forth in 40 CFR, Part 82.

---

**SECTION 14 - COMMENTS**

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The information accumulated herein is believed to be accurate but is not warranted to be whether originating with Fibre Glast Developments Corporation or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

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PO 65355

# MATERIAL SAFETY DATA SHEET

Product Trade Name:  
**WEST SYSTEM® 105 Resin**

## HMIS Hazard Rating Index

Health	2
Flammability	1
Reactivity	0
Personal Protection	H

Manufacturer:  
**Gougeon Brothers, Inc**  
**100 Patterson Ave.**  
**Bay City, MI 48706 USA**  
**(517) 684-7286**

Emergency Telephone:  
Chemtrec (800) 424-9300  
Poison Hotline (313) 745-5711

Date Prepared: January 4, 1993  
Replaces: January 2, 1992

## Section 1 - Product Information

Product Description: Formulated epoxy resin  
Chemical Family: Epoxy resin  
DOT Hazard Classification: Not regulated  
Formula/Molecular Weight: n/a - mixture

## Section 2 - Hazardous Ingredients

Material or component:	CAS Number	Contents %	ACGIH (TLV)	OSHA (PEL)	STEL
Benzyl alcohol	100-51-6		--	--	--
Bisphenol-F based epoxy resin	28064-14-4		--	--	--
Bisphenol-A based epoxy resin	25068-38-6		--	--	--
Epichlorohydrin	106-89-8	< 4 ppm	2 ppm	2 ppm	--
Ethylene Glycol Monobutyl Ether	111-76-2	0.2%	25 ppm	25 ppm	--

-- not established

## Section 3 - Physical Data

Boiling Point:	> 400°F	Melting point:	no info.	Solubility in Water:	slight
% Volatile (vol):	13.9**	Specific Gravity (water = 1):	1.15	Vapor pressure (mmHg):	< 1 mmHg @ 20°C
Evaporation rate:	slower than butyl acetate	Vapor Density:	heavier than air	pH:	no info.
Freezing point:	no info.	Viscosity:	1000 cP	Critical temperature:	no info.

Appearance and odor: Light yellow liquid with mild odor.

\*\*See note in Section 11.

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## Section 4 - Fire & Explosion Hazard Data

Flash point (method): &gt; 200°F (TCC)

Autoignition temperature: &gt; 800°F

Flammable limits in air (%): Lower: n/d

Upper: n/d

Extinguishing media: Foam, CO<sub>2</sub>, dry chemical

Special fire fighting procedures: Remove all ignition sources. Wear self-contained breathing apparatus and complete personal protective equipment.

Unusual fire and explosion hazards: Closed containers may rupture (due to buildup of pressure) when exposed to extreme heat.

## Section 5 - Reactivity Data

Product corrosive: No

Stability: Stable

Hazardous polymerization: Will not occur by itself, but a mass of more than one pound of product plus an aliphatic amine will cause irreversible polymerization with significant heat buildup.

Conditions to avoid: Excessive heat over long periods of time degrades the resin.

Materials to avoid: Strong acids, bases, amines and mercaptans can cause polymerization.

Hazardous decomposition products: Carbon monoxide and carbon dioxide fumes may be produced when heated to decomposition.

## Section 6 - Health Hazard Data

Ingestion: Low acute oral toxicity.

Inhalation: Not considered a problem unless heated to high temperature.

Eye contact: May cause irritation.

Skin contact: May cause allergic skin response in certain individuals. May cause moderate irritation to the skin.

Skin absorption: Not likely to be absorbed in toxic amounts.

Chronic effects of overexposure: Except for skin sensitization, repeated exposures is not anticipated to cause any significant adverse effects. Pre-existing skin and eye disorders may be aggravated by exposure to this product. Pre-existing skin or lung allergies may increase the chance of developing allergic symptoms to this product.

Other: Referral to a physician is recommended if there is any question about the seriousness of any injury.

## Section 7 - Emergency & First Aid Procedures

Ingestion: Induce vomiting if large amounts are ingested.

Inhalation: Remove to fresh air if effects occur. Consult a physician.

Eye contact: Flush immediately with water for 5 minutes. Consult a physician.

Skin contact: Wash off in flowing water or shower. Consult a physician. Decontaminate clothing and accessories before reuse.



## Section 8 - Spills, Leaks, Handling & Storage Procedures

Spill & leak procedures: ..... Soak up in absorbent material or scrape up. Residual can be removed with non-flammable solvent such as methylene chloride.

Waste disposal method: ..... (Disposer must comply with federal, state or local waste disposal laws.)  
Dispose of waste per federal, state or local regulations.

Handling & storage methods: ..... Store in tight containers to prevent moisture absorption and loss of volatiles.

## Section 9 - Special Protection Information

Ventilation requirements: ..... Good room ventilation usually adequate for most operations.

Respiratory protection: ..... Wear a properly fitted NIOSH/MSHA approved respirator with an organic vapor canister whenever exposure to vapor in concentrations above applicable limits is likely.

Protective clothing: ..... Clean, body-covering clothing; rubber gloves.

Eye protection: ..... Safety glasses.

Additional protective measures: ..... Practice good caution and personal cleanliness to avoid skin and eye contact.  
Avoid breathing vapors of heated materials.

## Section 10 - Special Precautions

None.

## Section 11 - Additional Information

\*\*EPA Method 24, as described in 40 CFR Part 60, was used to determine the Volatile Matter Content of mixed epoxy resin and hardener. This method states that two-component coating systems should be tested by mixing the individual components together at the proper ratio. Refer to the hardener's MSDS for information about the total volatile content of the resin/hardener system.

This product contains the following chemicals that have been designated as cancer and/or reproductive hazards under California Proposition 65, SARA Title III, Section 313 and state R-T-K composition in Pennsylvania, Massachusetts and Canada:

Component	CAS Number	Wt. %
Epichlorohydrin	106-89-8	< 4 ppm

Epichlorohydrin has been reported to produce cancer in laboratory animals and epidemiological studies present "weak" evidence of cancer risk to humans. It is listed in the IARC monographs and by NTP.

Abbreviations used on this MSDS: *n/a*, not applicable; *n/d*, not determined; *no info.*, no information available.

The information in the MSDS was obtained from sources which we believe are reliable but cannot guarantee. Additionally, your use of the information is beyond our control and may be beyond our knowledge. Therefore, the information is provided without any representation or warranty, express or implied.

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# MATERIAL SAFETY DATA SHEET

## Gougeon Brothers, Inc.

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ..... WEST SYSTEM® 206™ Slow Hardener.

PRODUCT CODE: ..... 206

CHEMICAL FAMILY: ..... Amine.

CHEMICAL NAME: ..... Modified aliphatic polyamine.

FORMULA: ..... Not applicable.

#### MANUFACTURER:

Gougeon Brothers, Inc.  
100 Patterson Avenue  
Bay City, MI 48706, U.S.A.  
Phone: 517-684-7286

#### EMERGENCY TELEPHONE NUMBERS:

Transportation  
CHEMTREC: ..... 800-424-9300  
Non-transportation  
Poison Hotline: .... 313-745-5711

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

#### HAZARDOUS INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS</u> <u>No.</u>	<u>CONCEN-</u> <u>TRATION</u> <u>(%)</u>	<u>EXPOSURE LIMITS</u>			
			<u>ACGIH</u>		<u>OSHA</u>	
			<u>TLV</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
Diethylenetriamine, liquid resin adduct	38294-69-8	30-50%	n/e	n/e	n/e	n/e
Polyoxypropylenediamine	9046-10-0		n/e	n/e	n/e	n/e
Tetraethylenepentamine (TEPA)	112-57-2		n/e	n/e	n/e	n/e
Reaction products of TETA and propylene oxide	26950-63-0		n/e	n/e	n/e	n/e
Triethylenetetramine (TETA)	112-24-3		n/e	n/e	n/e	n/e

n/e = not established.



**3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW****HMIS Hazard Rating:    Health - 3       Flammability - 1       Reactivity - 0**

**DANGER!** Strong skin sensitizer. Corrosive. May cause severe chemical burns to eyes and skin. Harmful if swallowed. Can cause respiratory tract irritation. Light-yellow colored liquid with ammonia odor.

**PRIMARY ROUTE(S) OF ENTRY:** .....Skin and eye contact, inhalation.

**POTENTIAL HEALTH EFFECTS:**

**ACUTE INHALATION:** .....Excessive exposure to vapor or mist are irritating to the upper respiratory tract, causing nasal discharge, coughing, and discomfort in eyes, nose, throat and chest. Severe cases may cause difficult breathing and lung damage.

**CHRONIC INHALATION:** .....May cause lung damage. May cause respiratory sensitization in susceptible individuals.

**ACUTE SKIN CONTACT:** .....Corrosive. May cause severe skin damage with burns and blistering. May cause allergic reaction in certain individuals.

**CHRONIC SKIN CONTACT:** .....Possible Skin sensitization. May cause persistent irritation and dermatitis. Prolonged skin contact may result in material being absorbed in harmful amounts.

**EYE CONTACT:** .....May cause blurred vision. May cause irritation with corneal injury resulting in permanent vision impairment or even blindness.

**INGESTION:** .....Moderately toxic. May cause gastrointestinal irritation or ulceration. May cause burns of the mouth and throat.

**SYMPTOMS OF OVEREXPOSURE:** .....Skin irritation, burns and blistering. Irritation of the nose and throat, headache, nausea and vomiting. Eye irritation and blurred vision.

**CARCINOGENICITY:**

NTP.....No.  
IARC.....No.  
OSHA .....No.



**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:**

Existing respiratory conditions, such as asthma and bronchitis. Existing skin conditions.

**4. FIRST AID MEASURES:**

**FIRST AID FOR EYES:** ..... Immediately flush with water for at least 15 minutes. Get prompt medical attention.

**FIRST AID FOR SKIN:** ..... Remove contaminated clothing. Immediately wash skin with soap and water. Do not apply greases or ointments.

**FIRST AID FOR INHALATION:** ..... Move to fresh air and consult physician if effects occur.

**FIRST AID FOR INGESTION:** ..... Give conscious person at least 2 glasses of water. Do not induce vomiting. If vomiting should occur spontaneously, keep airway clear. Get medical attention.

**5. FIRE FIGHTING MEASURES:**

**FLASH POINT:** ..... > 200°F (Open Cup)

**EXTINGUISHING MEDIA:** ..... Water spray, dry chemical, alcohol foam and carbon dioxide (CO<sub>2</sub>).

**FIRE AND EXPLOSION HAZARDS:** ..... When mixed with sawdust, wood chips, or other cellulosic material, spontaneous combustion can occur under certain conditions. If hardener is spilled into or mixed with sawdust, heat is generated as the air oxidizes the amine. If the heat is not dissipated quickly enough, it can ignite the sawdust.

**SPECIAL FIRE FIGHTING PROCEDURES:**

Use full-body protective gear and a self-contained breathing apparatus. If spill has ignited, use water spray to disperse vapors and protect personnel attempting to stop leak. Use water to cool fire-exposed containers.

**6. ACCIDENTAL RELEASE MEASURES:**

**SPILL OR LEAK PROCEDURES:** ..... Stop leak without additional risk. Wear proper personal protective equipment. Dike and contain spill. Ventilate area. Large spill - dike and pump into appropriate container for recovery. Small spill - dilute with water and recover or use inert, non-combustible absorbent material (e.g., sand) and shovel into suitable container. Do not use sawdust, wood chips or other cellulosic materials to absorb the spill, as the possibility for spontaneous combustion exists. Wash spill residue with warm, soapy water if necessary.



**7. HANDLING AND STORAGE:**

**STORAGE TEMPERATURE (min./max.):**.....40°F (4°C) / 90°F (32°C).

**SHELF LIFE:**.....Two years or more in original sealed container.

**STORAGE:** .....Store in cool, dry place with adequate ventilation.

**HANDLING PRECAUTIONS:**.....Use only with adequate ventilation. Avoid contact with skin and eyes. Wash thoroughly after handling.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION:**

**EYE PROTECTION GUIDELINES:**.....Chemical splash goggles, full-face shield or full-face respirator.

**SKIN PROTECTION GUIDELINES:**.....Use impervious gloves, such as rubber or latex. Full-body suits or coveralls are recommended.

**RESPIRATORY/VENTILATION GUIDELINES:**

General mechanical or local exhaust ventilation. With inadequate ventilation, use a NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge (approval #TC-23C).

**ADDITIONAL PROTECTIVE MEASURES:**

Use where there is immediate access to safety shower and emergency eye wash. Provide proper wash/cleanup facilities for proper hygiene. Contact lens should not be worn when working with this material.

**EXPOSURE LIMITS:**.....Not established for product as whole. Refer to Section 2.

**9. PHYSICAL AND CHEMICAL PROPERTIES:**

**PHYSICAL FORM**.....Liquid.

**COLOR**.....Light-yellow.

**ODOR**.....Ammonia-like.

**BOILING POINT**.....> 480°F.

**MELTING POINT/FREEZE POINT**.....No data.

**pH**.....11.4

**SOLUBILITY IN WATER**.....Appreciable.

**SPECIFIC GRAVITY**.....1.01

**BULK DENSITY**.....8.45 pounds/gallon.

**VAPOR PRESSURE**.....< 1 mmHg @ 20°C.

**VAPOR DENSITY**.....Heavier than air.



**% VOLATILE BY WEIGHT** .....EPA Method 24, as described in 40 CFR Part 60, was used to determine the Volatile Matter Content of mixed epoxy resin and hardener. This method states that two-component coating systems should be tested by determining weight loss after mixing the individual components together at the proper ratio, dissolving them in an appropriate solvent, and subjecting them to a temperature of 230°F. 105 Resin and 206 Hardener, mixed together at 5:1 by weight, has a density of 1176 g/L (9.81 lbs/gal). The combined VOC content for 105/206 is 49.5 g/L (0.41 lbs/gal).

#### **10. REACTIVITY:**

**STABILITY:** .....Stable.

**HAZARDOUS POLYMERIZATION:** ..... Will not occur.

**INCOMPATIBILITIES:** .....May react violently when in contact with oxidizing materials, acids or halogenated compounds such as methylene chloride. Reactions may be slow initially, then may rapidly generate heat and vapor pressure.

**DECOMPOSITION PRODUCTS:** ..... Burning or excessive heat may produce toxic levels of ammonia, oxides of nitrogen and irritating aldehydes.

#### **11. TOXICOLOGICAL INFORMATION:**

**Oral:** .....Slightly toxic.

**Inhalation:** .....No remarkable effects.

**Dermal:** .....Slightly toxic; corrosive.

#### **12. ECOLOGICAL INFORMATION:**

No data.

#### **13. DISPOSAL CONSIDERATIONS:**

**WASTE DISPOSAL METHOD:** .....Evaluation of this product using RCRA criteria shows that it is not a hazardous waste, either by listing or characteristics, in its purchased form. It is the responsibility of the user to determine proper disposal methods.

Incineration or landfill may be preferred methods when conducted in accordance with federal, state and local regulations.



**14. TRANSPORTATION INFORMATION:**

D.O.T. SHIPPING NAME: ..... Polyamines, liquid, corrosive, n.o.s.  
TECHNICAL SHIPPING NAME: ..... Diethylenetriamine, liquid resin adduct.  
D.O.T. HAZARD CLASS: ..... Class 8  
U.N./N.A. NUMBER: ..... UN 2735  
PACKING GROUP: ..... PG III

**15. REGULATORY INFORMATION:**

OSHA STATUS: ..... Corrosive; strong irritant; sensitizer.  
TSCA STATUS: ..... All components are listed on TSCA inventory.  
SARA TITLE III:  
SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: ...None.  
SECTION 313 TOXIC CHEMICALS .....None.

**STATE REGULATORY INFORMATION:**

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of this MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

**COMPONENT NAME****/CAS NUMBER****CONCENTRATION****STATE CODE**

None known.

**16. OTHER INFORMATION:**

REASON FOR ISSUE: ..... New information in Sections 8 and 14.  
PREPARED BY: ..... T. J. Atkinson  
APPROVED BY: ..... G. M. House  
TITLE: ..... Health, Safety & Environmental Coordinator  
APPROVAL DATE: ..... January 2, 1996  
SUPERSEDES DATE: ..... March 31, 1995  
MSDS NUMBER: ..... 206-96a

Note: The Hazardous Material Indexing System (HMIS), cited in the Emergency Overview of Section 3, uses the following index to assess hazard rating: 0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; and 4 = Severe.

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Gougeon Brothers, Inc. The data on this sheet is related only to the specific material designated herein. Gougeon Brothers, Inc. assumes no legal responsibility for use or reliance upon these data.





08/14/02

PIASECKI  
REF po#66727  
WEST TERMINUS OF SECOND ST  
ESSINGTON, PA, United States 19029

PO Number: 592

Dear Customer:

Material Safety Data Sheets (MSDS) are routinely sent to you with your initial order for our products. These MSDSs give identity, health, safety and regulatory information, including safe handling procedures and data necessary to comply with various environmental statutes and state right-to-know laws.

The MSDSs for the products listed below are enclosed with this letter. Please forward copies of the MSDSs to the responsible personnel in your company and any appropriate downstream customers.

Thank you for your business and for your attention to our MSDSs.

Sincerely,

Product Safety Group

Enclosure(s):

MSDS #: 6011    RP 1510 Hardener  
MSDS #: 6083    RP 4017 Resin



Vantico Inc.  
North America  
**Polymer Specialties**  
4917 Dawn Avenue  
East Lansing, MI 48823-5691

**vantico**

8am to 4:30pm Phone: (517) 351-5900  
24-Hour Health/Environmental Emergency Phone: 1-888-354-3323

**Effective Date: 12/6/01**

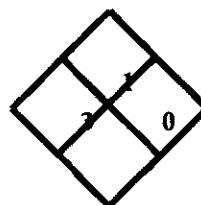
**Material Safety Data Sheet**

MSDS No: 6011

**1. PRODUCT IDENTIFICATION**

**Trade Name:** RP 1510 Hardener

**Chemical Family:** Amine



**NFPA RATING**

<b>Health</b>	<b>3</b>
<b>Flammability</b>	<b>1</b>
<b>Reactivity</b>	<b>0</b>
<b>Protective Equipment</b>	

**HMIS RATING**

**Intended Use or Product Type:** Heat Resistant Hardener.

**2. COMPOSITION / INFORMATION ON INGREDIENTS**

O S H A	CAS No.	CHEMICAL IDENTITY	EXPOSURE LIMITS				CARCINOGEN STATUS			
			ACGIH		OSHA		MFR.	IARC	NTP	OSHA
			TWA	STEL	PEL	STEL				
*	1477-55-0  Common Name:	1,3-Benzenedimethanamine  m-Xylenediamine	NE	.1 mg/m3	NE	NE	NE	NR	NR	NR
*	2855-13-2  Common Name:	Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl- Isophorone diamine	NE	NE	NE	NE	NE	NR	NR	NR
*	616-47-7 Common Name:	1H-Imidazole, 1-methyl- 1-Methylimidazole	NE	NE	NE	NE	NE	NR	NR	NR
*	68738-77-2  Common Name:	1,3-Benzenedimethanamine, polymer with diglycidyl ether of bisphenol A and 2,2,4-trimethyl 1,6-hexane diamine MXDA/TMD/DGEBA adduct intermediate	NE	NE	NE	NE	NE	NR	NR	NR

\* = OSHA Hazardous Ingredient

**3. HAZARDS IDENTIFICATION**



Effective Date: 12/6/01

**Emergency Overview:** Corrosive - Causes skin and eye burns. Harmful if absorbed through skin. May cause allergic skin and respiratory reactions.

**Primary Route(s) of Entry:** Dermal; heated product may produce inhalable vapors.

**Acute Exposure:** Corrosive. Causes skin and eye burns.

#### **4. FIRST AID MEASURES**

**Ingestion:** If conscious, give 2 - 4 glasses of water to drink. Do not induce vomiting. Call a physician.

**Skin:** Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. Destroy contaminated shoes.

**Inhalation:** Remove to fresh air. Call a physician.

**Eyes:** Immediately flush eyes with water for at least 15 minutes. Call a physician.

**Overexposure Effects:** Corrosive - causes skin and eye burns. Harmful if absorbed through skin. May cause allergic skin and respiratory reactions.

**Medical Conditions Aggravated by Exposure:** Skin, eye and pulmonary conditions.

**Additional Information:** Referral to a physician is recommended if there is any question about the seriousness of any injury.

#### **5. FIRE FIGHTING MEASURES**

<b>Flash Point:</b>	> 250°F (> 121 °C)
<b>Flash Point Method Used:</b>	PMCC
<b>Flammable Limits in Air (Lower - % by volume):</b>	Not established
<b>Flammable Limits in Air (Upper - % by volume):</b>	Not established

**Fire Fighting Extinguishing Media:** Carbon dioxide, dry chemical, foam, water.

**Fire Fighting Equipment:** Use self-contained breathing apparatus.

**Fire and Explosion Hazards:** Decomposition and combustion products may be toxic.

#### **6. ACCIDENTAL RELEASE MEASURES**

**Accidental Release Measures:** Remove spillage by absorbing in absorbent material.

#### **7. HANDLING AND STORAGE**



Effective Date: 12/6/01

**Signal Word:** Danger!

**Precautions:** Corrosive - causes skin and eye burns. Can cause allergic respiratory reaction and allergic skin reaction. Can be harmful if absorbed through skin. Do not get in eyes, on skin, or on clothing. Avoid breathing vapor or mist. Keep container closed when not in use. Use with adequate ventilation. Wash thoroughly after handling.

**Other Handling Information:** Nuisance dust may be generated when sanding or sawing cured material.

## **8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Skin Protection:** Wear impermeable gloves.

**Respiratory Protection:** Use NIOSH approved organic vapor cartridge respirator when vapor/mist exposure is likely.

**Eye Protection:** Wear splash-proof chemical goggles.

**Engineering Controls:** General mechanical and local exhaust in accordance with ACGIH recommendations.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Color:</b>	Clear Amber
<b>Physical State:</b>	Liquid
<b>Solubility in Water:</b>	Moderate
<b>Vapor Pressure:</b>	Not Determined
<b>Specific Gravity:</b>	1.05 (water = 1)
<b>Boiling Point:</b>	> 400°F (> 204 °C)
<b>Evaporation Rate:</b>	Not Determined
<b>Vapor Density:</b>	Not Determined
<b>VOC:</b>	270.375 g/L

**Percent Volatile:** Negligible.

## **10. STABILITY AND REACTIVITY**

**Conditions to Avoid:** Excessive heat for prolonged periods of time.

**Stability:** Stable.

**Incompatibility:** Strong oxidizers, acids and bases.

**Hazardous Decomposition Products:** Combustion may form toxic materials, such as carbon dioxide, carbon monoxide.

**Hazardous Polymerization:** Will not occur.

## **11. TOXICOLOGICAL INFORMATION**

**Acute Dermal Toxicity (LD50):** Component(s) are toxic, 200 - 1000 mg/kg (rabbit).

**Sensitization:** Causes allergic skin and respiratory sensitivity in some people.



**Skin Irritation:** Corrosive. Causes burns.

**Eye Irritation:** Corrosive. Causes burns.

## **12. ECOLOGICAL INFORMATION**

## **13. DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:** Consult qualified local or corporate personnel for method that will comply with local, state and federal health and environmental regulations.

## **14. TRANSPORT INFORMATION**

**DOT: Non-Bulk**

**Proper Shipping Name:**

**Technical Shipping Name (If n.o.s.):**

**Hazard Class:**

**ID Number:**

**Packing Group:**

**Label:**

Polyamines, liquid, corrosive, n.o.s.

Isophorone diamine, Metaxylenediamine

8

UN 2735

PG III

Corrosive

## **15. REGULATORY INFORMATION**

### **US Federal Regulations:**

**Occupational Safety and Health Act (OSHA):** This Material Safety Data Sheet (MSDS) has been prepared in compliance with the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. This product is considered to be a hazardous chemical under that standard.

**Resource Conservation and Recovery Act (RCRA):** Not a hazardous waste under RCRA (40 CFR 261) but handle with care due to corrosive effect on skin and eyes.

**SARA Title III: Section 313 Toxic Chemical List (TCL):** This product does not contain any chemicals for routine annual toxic chemical release reporting under Section 313 (40 CFR 372).

**TSCA Section 8(b) - Inventory Status:** Chemical components listed on TSCA Inventory.

**TSCA Section 12(b) - Export Notification:** This product does not contain any chemical(s) that are subject to a Section 12(b) export notification.

### **State Regulations:**

**California Proposition 65:** This product does not contain any chemicals currently on the California list of Known Carcinogens and Reproductive Toxins.

**Pennsylvania Right-to-Know:** The following is required composition information:

**Chemical Name:** 1,3-Benzenedimethanamine, polymer with diglycidyl ether of bisphenol A and 2,2,4-trimethyl 1,6-hexane diamine



**Effective Date:** 12/6/01**Common Name:** MXDA/TMD/DGEBA adduct intermediate**CAS Number:** 68738-77-2**Comment:** Not on Pennsylvania Hazardous Substance List**Chemical Name:** Cyclohexanemethanamine, 5-amino-1,3,3-trimethyl-**Common Name:** Isophorone diamine**CAS Number:** 2855-13-2**Comment:** Not on Pennsylvania Hazardous Substance List**Chemical Name:** 1,3-Benzenedimethanamine**Common Name:** m-Xylenediamine**CAS Number:** 1477-55-0**Comment:** Hazardous Substance**Chemical Name:** 1H-Imidazole, 1-methyl-**Common Name:** 1-Methylimidazole**CAS Number:** 616-47-7**Comment:** Not on Pennsylvania Hazardous Substance List**16. OTHER INFORMATION****MSDS No:**

6011

**Approved By:**

Kenneth L. Payne

**Title:**

E,H&amp;S Manager

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Vantico Inc.  
North America  
**Polymer Specialties**  
4917 Dawn Avenue  
East Lansing, MI 48823-5891

**vantico**

8am to 4:30pm Phone: (517) 351-5900  
24-Hour Health/Environmental Emergency Phone: 1-888-354-3323

**Effective Date:** 12/6/01

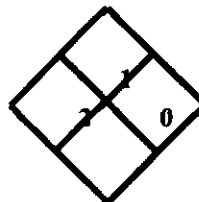
**Material Safety Data Sheet**

MSDS No: 6083

**1. PRODUCT IDENTIFICATION**

**Trade Name:** RP 4017 Resin

**Chemical Family:** Epoxy



**NFPA RATING**

<b>Health</b>	<b>2</b>
<b>Flammability</b>	<b>1</b>
<b>Reactivity</b>	<b>0</b>
<b>Protective Equipment</b>	

**HMIS RATING**

**Intended Use or Product Type:** High Heat Laminating Resin.

**2. COMPOSITION / INFORMATION ON INGREDIENTS**

O S H A	CAS No.	CHEMICAL IDENTITY	EXPOSURE LIMITS					CARCINOGEN STATUS		
			ACGIH		OSHA		MFR.	IARC	NTP	OSHA
			TWA	STEL	PEL	STEL				
*	2425-79-8	Oxirane, 2,2'-[1,4-butanediylbis(oxyethylene)]bis-Butanediol Diglycidyl Ether	NE	NE	NE	NE	NE	NR	NR	NR
	Common Name:									
*	25068-38-6	Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane Bisphenol A Diglycidyl Ether Polymer	NE	NE	NE	NE	NE	NR	NR	NR
	Common Name:									
*	28064-14-4	Phenol, polymer with formaldehyde, glycidyl ether Epoxy Phenol Novolac	NE	NE	NE	NE	NE	NR	NR	NR
	Common Name:									
*	28768-32-3	Oxiranemethanamine, N,N'-(methylenedi-4,1-phenylene)bis[N-(oxiranylmethyl)-Tetraglycidylbis(p-aminophenyl)methane	NE	NE	NE	NE	NE	NR	NR	NR
	Common Name:									

NE = Not Established NR = Not Reviewed \* = OSHA Hazardous Ingredient

**3. HAZARDS IDENTIFICATION**



Effective Date: 12/6/01

**Emergency Overview:** Causes severe skin irritation. Causes eye irritation. May cause skin burns and allergic skin reaction.

**Primary Route(s) of Entry:** Dermal; heated product may produce inhalable vapors.

**Carcinogenicity (NTP, IARC, OSHA):** This product contains carbon black which is classified as a carcinogen by IARC (2B, possibly carcinogenic to humans) and NIOSH.

#### **4. FIRST AID MEASURES**

**Ingestion:** If conscious, give 2 - 4 glasses of water to drink. Do not induce vomiting. Call a physician.

**Skin:** Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. Destroy contaminated shoes.

**Inhalation:** Remove to fresh air. Call a physician.

**Eyes:** Immediately flush eyes with water for at least 15 minutes. Call a physician.

**Overexposure Effects:** Causes severe skin irritation. Causes eye irritation. May cause skin burns and allergic skin reaction.

**Medical Conditions Aggravated by Exposure:** Skin and eye conditions.

**Additional Information:** Referral to a physician is recommended if there is any question about the seriousness of any injury.

#### **5. FIRE FIGHTING MEASURES**

<b>Flash Point:</b>	> 300°F (> 149 °C)
<b>Flash Point Method Used:</b>	PMCC
<b>Flammable Limits in Air (Lower - % by volume):</b>	Not established
<b>Flammable Limits in Air (Upper - % by volume):</b>	Not established

**Fire Fighting Extinguishing Media:** Carbon dioxide, dry chemical, foam, water.

**Fire Fighting Equipment:** Use self-contained breathing apparatus.

**Fire and Explosion Hazards:** Decomposition and combustion products may be toxic.

#### **6. ACCIDENTAL RELEASE MEASURES**

**Accidental Release Measures:** Remove spillage by absorbing in absorbent material.

#### **7. HANDLING AND STORAGE**

**Signal Word:** Danger!



Effective Date: 12/6/01

**Precautions:** Causes severe skin irritation and may cause skin burns. Can cause eye irritation and allergic skin reaction. Do not get on skin or on clothing. Avoid contact with eyes. Wash thoroughly after handling.

**Other Handling Information:** Nuisance dust may be generated when sanding or sawing cured material.

## **8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Skin Protection:** Wear impermeable gloves.

**Respiratory Protection:** Use NIOSH approved organic vapor cartridge respirator when vapor/mist exposure is likely.

**Eye Protection:** Wear splash-proof chemical goggles.

**Engineering Controls:** General mechanical and local exhaust in accordance with ACGIH recommendations.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Color:</b>	Black
<b>Odor:</b>	Mild
<b>Physical State:</b>	Flowing Filled Liquid
<b>Solubility in Water:</b>	Negligible
<b>Vapor Pressure:</b>	0.0073 mm Hg at 80°C (176 °F)
<b>Specific Gravity:</b>	1.26 (water = 1)
<b>Boiling Point:</b>	> 350°F (> 177 °C)
<b>Evaporation Rate:</b>	Not Determined
<b>Vapor Density:</b>	Not Determined
<b>VOC:</b>	0 g/L
<b>pH:</b>	Not Determined

**Percent Volatile:** Negligible.

## **10. STABILITY AND REACTIVITY**

**Conditions to Avoid:** Excessive heat for prolonged periods of time.

**Stability:** Stable.

**Incompatibility:** Strong oxidizers, acids and bases.

**Hazardous Decomposition Products:** Combustion may form toxic materials, such as carbon dioxide, carbon monoxide.

**Hazardous Polymerization:** Will not occur.

## **11. TOXICOLOGICAL INFORMATION**

**Sensitization:** Possible in susceptible individuals.

**Carcinogenicity:** This product contains carbon black which is classified as a carcinogen by IARC (2B, possibly carcinogenic to humans) and NIOSH.



Effective Date: 12/6/01

**Skin Irritation:** Severe skin irritant.

**Eye Irritation:** Irritant.

**Mutagenicity:** Test results for N,N,N',N'-tetraglycidyl bis (para-aminophenyl) methane: ames test: positive; e.coli: negative; mouse lymphoma: positive; cell transformation: negative; nucleus anomaly (in vivo): negative; sister chromatid exchange (in vivo): inconclusive / negative; cytogenetic spermatocytes: negative; cytogenetic spermatogonia: negative. These results for N,N,N',N'-tetraglycidyl bis (para-aminophenyl) methane were filed with the EPA with a statement that the results do not seem to indicate that there is a mutagenic hazard to workers.

## **12. ECOLOGICAL INFORMATION**

## **13. DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:** Consult qualified local or corporate personnel for method that will comply with local, state and federal health and environmental regulations.

## **14. TRANSPORT INFORMATION**

**DOT: Non-Bulk**

**Proper Shipping Name:**

Resin compounds, N.O.I.

**Department of Transportation:** Not regulated as a hazardous material by the U.S. Dept. of Transportation (DOT) 49 CFR 172.101 hazardous materials table.

## **15. REGULATORY INFORMATION**

### **US Federal Regulations:**

**Occupational Safety and Health Act (OSHA):** This Material Safety Data Sheet (MSDS) has been prepared in compliance with the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. This product is considered to be a hazardous chemical under that standard.

**Resource Conservation and Recovery Act (RCRA):** Not a hazardous waste under RCRA (40 CFR 261).

**SARA Title III: Section 313 Toxic Chemical List (TCL):** This product does not contain any chemicals for routine annual toxic chemical release reporting under Section 313 (40 CFR 372).

**TSCA Section 8(b) - Inventory Status:** Chemical components listed on TSCA Inventory.

**TSCA Section 12(b) - Export Notification:** This product does not contain any chemical(s) that are subject to a Section 12(b) export notification.

### **State Regulations:**

**California Proposition 65:** The following is required composition information. This product contains the following chemical(s) which are currently listed on the California list of Known Carcinogens and Reproductive Toxins:



Effective Date: 12/6/01

Chemical Name: Quartz (SiO<sub>2</sub>)

Common Name: Crystalline silica

CAS Number: 14808-60-7

Percent in Composition: 0.02 % by wt

Comment: Warning! This chemical is known to the State of California to cause cancer.

Chemical Name: Oxirane, (phenoxymethyl)-

Common Name: Phenyl Glycidyl Ether

CAS Number: 122-60-1

Percent in Composition: 0.0002 % by wt

Comment: Warning! This chemical is known to the State of California to cause cancer.

Chemical Name: Benzenamine, 4,4'-methylenebis-

Common Name: MDA

CAS Number: 101-77-9

Percent in Composition: 0 % by wt

Comment: Warning! This chemical is known to the State of California to cause cancer.

**Pennsylvania Right-to-Know:** The following is required composition information:

Chemical Name: Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane

Common Name: Bisphenol A Diglycidyl Ether Polymer

CAS Number: 25068-38-6

Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: Phenol, polymer with formaldehyde, glycidyl ether

Common Name: Epoxy Phenol Novolac

CAS Number: 28064-14-4

Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: Oxiranemethanamine, N,N'-(methylenedi-4,1-phenylene)bis[N-(oxiranylmethyl)-

Common Name: Tetraglycidylbis(p-aminophenyl)methane

CAS Number: 28768-32-3

Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: Limestone

Common Name: Calcium Carbonate

CAS Number: 1317-65-3

Comment: Hazardous Substance

Chemical Name: Oxirane, 2,2'-[1,4-butanediylbis(oxymethylene)]bis-

Common Name: Butanediol Diglycidyl Ether

CAS Number: 2425-79-8

Comment: Not on Pennsylvania Hazardous Substance List

Chemical Name: Talc

Common Name: Talc

CAS Number: 14807-96-6

Comment: Hazardous Substance

## **16. OTHER INFORMATION**



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Effective Date: 12/6/01

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MSDS No: 6083  
Approved By: Kenneth L. Payne  
Title: E,H&S Manager

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## MATERIAL SAFETY DATA SHEET

EQUILON MSDS: 857475E-01 01/04/99

AEROSHELL(R) TURBINE OIL 555

TELEPHONE NUMBER:

24 HOUR EMERGENCY ASSISTANCE

EQUIVA SERVICES: 877-276-7283

GENERAL MSDS ASSISTANCE

877-276-7285

CHEMTREC: 800-424-9300

## NAME AND ADDRESS

EQUILON ENTERPRISES LLC

PRODUCT STEWARDSHIP

P.O. BOX 674414

HOUSTON, TX 77267-4414

## SECTION I

## NAME

PRODUCT: AEROSHELL(R) TURBINE OIL 555

CHEM NAME: MIXTURE (SEE SECTION II-A)

CHEM FAMILY: SYNTHETIC HYDROCARBON; TURBINE ENGINE OIL

SHELL CODE: 60073

HEALTH HAZARD: 3 FIRE HAZARD: 1 REACTIVITY: 0

## SECTION II-A

## PRODUCT/INGREDIENT

NO.	COMPOSITION	CAS NO.	PERCENT
P	AEROSHELL TURBINE OIL 555	MIXTURE	100
1	SYNTHETIC ESTER	68424-31-7	0-96
2	SYNTHETIC ESTER	68424-33-9	0-96
3	OCTYLATED N-PHENYL-1-NAPHTHYLAMINE	68259-36-9	1-2
4	P,P-DIOCTYLDIPHENYLAMINE	101-67-7	1-2
5	TRICRESYL PHOSPHATE (MIXED ISOMERS)	1330-78-5	1
6	MINOR ADDITIVES	MIXTURE	<1
NFPA HAZARD RATING: HEALTH 0 FIRE 1 REACTIVITY 0			

## SECTION II-B

## ACUTE TOXICITY DATA

NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50
P	NOT AVAILABLE	NOT AVAILABLE	NOT AVAILABLE
5	>4.6 G/KG (RAT)	>4.6 G/KG (RABBIT)	NOT AVAILABLE

## SECTION III

## HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

EYE CONTACT: BASED ON COMPONENT INFORMATION THIS PRODUCT IS MILDLY IRRITATING TO THE EYES.

SKIN CONTACT: BASED ON COMPONENT INFORMATION, PROLONGED OR REPEATED LIQUID CONTACT CAN RESULT IN DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN SKIN IRRITATION AND DERMATITIS. SKIN CONTACT MAY RESULT IN ABSORPTION OF TRICRESYL PHOSPHATE WHICH COULD RESULT IN DELAYED NEUROTOXICITY. RELEASE DURING HIGH PRESSURE USAGE MAY RESULT IN INJECTION OF OIL INTO THE SKIN CAUSING LOCAL NECROSIS.

INHALATION: INHALATION OF VAPORS (GENERATED AT HIGH TEMPERATURES ONLY) OR OIL MIST FROM THIS PRODUCT MAY BE MILDLY IRRITATING TO THE NOSE, THROAT AND RESPIRATORY TRACT; BASED ON THE PRESENCE OF TRICRESYL PHOSPHATE. THIS INHALATION MAY RESULT IN DELAYED NEUROTOXICITY.

INGESTION: BASED ON PRESENCE OF TRICRESYL PHOSPHATE THIS PRODUCT MAY BE TOXIC IF SWALLOWED, RESULTING IN DELAYED NEUROTOXICITY.

SIGNS AND SYMPTOMS: IRRITATION AS NOTED ABOVE. DELAYED NEUROTOXICITY MAY BE EVIDENCED BY NUMBNESS AND TINGLING OF THE HANDS AND FEET.

AGGRAVATED MEDICAL CONDITIONS:

PREEXISTING EYE, SKIN, RESPIRATORY AND NEUROLOGICAL DISORDERS MAY BE



AGGRAVATED BY EXPOSURE TO THIS PRODUCT.  
OTHER HEALTH EFFECTS:

THIS PRODUCT AND ITS COMPONENTS ARE NOT CLASSIFIED AS CARCINOGENS BY INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC), NATIONAL TOXICOLOGY PROGRAM (NTP) OR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).

SEE SECTION VI FOR ADDITIONAL HEALTH INFORMATION.

## SECTION IV

## OCCUPATIONAL EXPOSURE LIMITS

COMP NO.	PEL/TWA	OSHA PEL/CEILING	TLV/TWA	ACGIH TLV/STEL	OTHER
P	5 MG/M3*		5 MG/M3*	10 MG/M3*	
3	0.1 MG/M3**		0.1 MG/M3**		

\* RECOMMENDED FOR MINERAL OIL MIST. \*\* TRICRESYL PHOSPHATE (ORTHO ISOMER)

## SECTION V

## EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

SKIN CONTACT: IMMEDIATELY REMOVE CONTAMINATED CLOTHING OR SHOES, WIPE EXCESS FROM SKIN AND FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. USE SOAP IF AVAILABLE OR FOLLOW BY WASHING WITH SOAP AND WATER. DO NOT REUSE CLOTHING UNTIL THOROUGHLY CLEANED. GET MEDICAL ATTENTION. CONTAMINATED LEATHER ARTICLES, INCLUDING SHOES, CANNOT BE DECONTAMINATED AND SHOULD BE DESTROYED TO PREVENT REUSE.

INHALATION: REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

INGESTION: DO NOT GIVE LIQUIDS IF VICTIM IS UNCONSCIOUS OR VERY DROWSY. OTHERWISE, GIVE NO MORE THAN 2 GLASSES OF WATER AND INDUCE VOMITING BY GIVING 30CC (2 TABLESPOONS) SYRUP OF IPECAC.\* IF IPECAC IS UNAVAILABLE, GIVE 2 GLASSES OF WATER AND INDUCE VOMITING BY TOUCHING FINGER TO BACK OF VICTIM'S THROAT. KEEP VICTIM'S HEAD BELOW HIPS WHILE VOMITING. GET MEDICAL ATTENTION.

NOTE TO PHYSICIAN: \*IF VICTIM IS A CHILD, GIVE NO MORE THAN 1 GLASS OF WATER AND 15CC (1 TABLESPOON) SYRUP OF IPECAC. IF SYMPTOMS SUCH AS LOSS OF GAG REFLEX, CONVULSIONS OR UNCONSCIOUSNESS OCCUR BEFORE EMESIS. GASTRIC LAVAGE SHOULD BE CONSIDERED FOLLOWING INTUBATION WITH A CUFFED ENDOTRACHEAL TUBE.

## SECTION VI

## SUPPLEMENTAL HEALTH INFORMATION

TRICRESYL PHOSPHATE (MIXED ISOMERS) HAS BEEN REPORTED TO PRODUCE DELAYED NEUROTOXICITY IN EXPERIMENTAL ANIMALS. THE ORTHO ISOMER IN THIS ADDITIVE IS KEPT BELOW A MINIMUM PURSUANT TO MILITARY SPECIFICATIONS (TYPICALLY 0.03%). MOBIL HAS RECENTLY REPORTED A STUDY TO THE EPA PURSUANT TO SECTION 8(E) OF TSCA IN WHICH THEY DEMONSTRATED THAT TRICRESYL PHOSPHATE (MIXED ISOMERS) AT 3% IN A LUBRICANT BASE OIL PRODUCED SIGNIFICANT SERUM AND ERYTHROCYTE CHOLINESTERASE INHIBITION AS WELL AS NEUROPATHY TARGET ESTERASE NEUROTOXIC ESTERASE INHIBITION. OTHER STUDIES WITH TCP IN RATS AND MICE INVOLVING ORAL ADMINISTRATION PRODUCED A DECREASE IN SPERM CONCENTRATION AND SPERM MOTILITY WITH RESULTING DECREASED LITTER SIZE AND PUP VIABILITY IN FEMALES.

## SECTION VII

## PHYSICAL DATA

BOILING POINT (DEG F): NOT AVAILABLE	SPECIFIC GRAVITY (H2O = 1): 0.9937	VAPOR PRESSURE (MM HG): NOT AVAILABLE
MELTING POINT (DEG F): -65 DEG F (POUR POINT)	SOLUBILITY IN WATER: NOT AVAILABLE	VAPOR DENSITY (AIR = 1): NOT AVAILABLE
VISCOSITY: 5.35 (CS @ 210 DEG F)		



EVAPORATION RATE (NORMAL BUTYL ACETATE = 1):NOT APPLICABLE

APPEARANCE AND ODOR:LIGHT TAN FLUID

PHYS/CHEM PROPERTIES:

SEE ABOVE FOR DETAILS

---

**SECTION VIII****FIRE AND EXPLOSION HAZARDS**

---

FLASH POINT AND METHOD: 505 DEG F (COC)

FLAMMABLE LIMITS/PERCENT VOLUME IN AIR: LOWER: N/AV HIGHER: N/AV

EXTINGUISHING MEDIA:

USE WATER FOG, FOAM, DRY CHEMICAL OR CO2. DO NOT USE A DIRECT STREAM OF WATER. PRODUCT WILL FLOAT AND CAN BE REIGNITED ON SURFACE OF WATER.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS:

MATERIAL WILL NOT BURN UNLESS PREHEATED. DO NOT ENTER CONFINED FIRE SPACE WITHOUT FULL BUNKER GEAR (HELMET WITH FACE SHIELD, BUNKER COATS, GLOVES AND RUBBER BOOTS). INCLUDING A POSITIVE PRESSURE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NONE IDENTIFIED

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**SECTION IX****REACTIVITY**

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STABILITY: STABLE

HAZARDOUS POLYMERIZATION WILL NOT OCCUR

CONDITIONS AND MATERIALS TO AVOID:

AVOID HEAT, FLAME AND CONTACT WITH STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS:

THERMAL DECOMPOSITION PRODUCTS ARE HIGHLY DEPENDENT ON THE COMBUSTION CONDITIONS. A COMPLEX MIXTURE OF AIRBORNE SOLID, LIQUID, PARTICULATES AND GASES WILL EVOLVE WHEN THIS MATERIAL UNDERGOES PYROLYSIS OR COMBUSTION. CARBON MONOXIDE AND OTHER UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED UPON COMBUSTION.

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**SECTION X****EMPLOYEE PROTECTION**

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RESPIRATORY PROTECTION:

IF EXPOSURE MAY OR DOES EXCEED OCCUPATIONAL EXPOSURE LIMITS (SEC. IV) USE A NIOSH-APPROVED RESPIRATOR TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134 USE EITHER AN ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR ORGANIC VAPORS AND PARTICULATES.

PROTECTIVE CLOTHING

AVOID CONTACT WITH EYES. WEAR CHEMICAL GOGGLES IF THERE IS LIKELIHOOD OF CONTACT WITH EYES. AVOID CONTACT WITH SKIN AND CLOTHING. WEAR CHEMICAL-RESISTANT GLOVES AND PROTECTIVE CLOTHING. TEST DATA FROM PUBLISHED LITERATURE AND/OR GLOVE AND CLOTHING MANUFACTURERS INDICATE THE BEST PROTECTION IS PROVIDED BY NITRILE GLOVES.

ADDITIONAL PROTECTIVE MEASURES:

USE VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS. EYE WASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE FOR EMERGENCY USE.

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**SECTION XI****ENVIRONMENTAL PROTECTION**

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SPILL OR LEAK PROCEDURES:

MAY BURN ALTHOUGH NOT READILY IGNITABLE. USE CAUTIOUS JUDGMENT WHEN CLEANING UP LARGE SPILLS. \*\*\* LARGE SPILLS \*\*\* WEAR RESPIRATOR AND PROTECTIVE CLOTHING AS APPROPRIATE. SHUT OFF SOURCE OF LEAK IF SAFE TO DO SO. DIKE AND CONTAIN. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND OR OTHER SUITABLE MATERIAL; DISPOSE OF PROPERLY. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE. \*\*\* SMALL SPILLS \*\*\* TAKE UP WITH AN ABSORBENT MATERIAL AND DISPOSE OF PROPERLY.

---

**SECTION XII****SPECIAL PRECAUTIONS**

---

AVOID EYE AND SKIN CONTACT. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING, APPLYING COSMETICS, OR USING TOILET FACILITIES. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE. CONTAMINATED LEATHER ARTICLES INCLUDING SHOES CANNOT BE



DECONTAMINATED AND SHOULD BE DESTROYED TO PREVENT REUSE.  
STORE IN A COOL, DRY PLACE WITH ADEQUATE VENTILATION. KEEP AWAY FROM OPEN  
FLAMES AND HIGH TEMPERATURES.

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SECTION XIII TRANSPORTATION REQUIREMENTS

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DEPARTMENT OF TRANSPORTATION CLASSIFICATION:

NOT HAZARDOUS BY D.O.T. REGULATIONS.

DOT PROPER SHIPPING NAME: NOT APPLICABLE

OTHER REQUIREMENTS: NOT APPLICABLE

---

SECTION XIV OTHER REGULATORY CONTROLS

---

THE COMPONENTS OF THIS PRODUCT ARE LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL  
SUBSTANCES.

PROTECTION OF STRATOSPHERIC OZONE (PURSUANT TO SECTION 611 OF THE CLEAN AIR ACT  
AMENDMENTS OF 1990): PER 40 CFR PART 82, THIS MATERIAL DOES NOT CONTAIN NOR  
WAS IT DIRECTLY MANUFACTURED WITH ANY CLASS I OR CLASS II OZONE DEPLETING  
SUBSTANCES.

IN ACCORDANCE WITH SARA TITLE III, SECTION 313, THE ATTACHED ENVIRONMENTAL DATA  
SHEET (EDS) SHOULD ALWAYS BE COPIED AND SENT WITH THE MSDS.

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SECTION XV STATE REGULATORY INFORMATION

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THE FOLLOWING CHEMICALS ARE SPECIFICALLY LISTED BY INDIVIDUAL STATES; OTHER PROD  
UCT SPECIFIC HEALTH AND SAFETY DATA IN OTHER SECTIONS OF THE MSDS MAY ALSO BE AP  
PLICABLE FOR STATE REQUIREMENTS. FOR DETAILS ON YOUR REGULATORY REQUIREMENTS YO  
U SHOULD CONTACT THE APPROPRIATE AGENCY IN YOUR STATE.

STATE LISTED COMPONENT	CAS NO	PERCENT	STATE CODE
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TRICRESYL PHOSPHATE (MIXED ISOMERS)	1330-78-5	1	MA, MI, NJ
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SECTION XVI SPECIAL NOTES

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NEW PRODUCT. ORIGINAL MSDS ISSUED.

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE  
TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT DATA. IT IS  
PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD  
COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE  
INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH  
RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED  
HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY,  
PROCESS, USE OR DISTRIBUTE, AND ARE ENCOURAGED TO ADVISE THOSE WHO MAY  
COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE THE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH  
RESPECT TO THE PRODUCT, YOU SHOULD CONSULT WITH YOUR LEGAL ADVISOR OR THE  
APPROPRIATE GOVERNMENT AGENCY. WE WILL NOT PROVIDE ADVICE ON SUCH  
MATTERS, OR BE RESPONSIBLE FOR ANY INJURY FROM THE USE OF THE PRODUCT  
DESCRIBED HEREIN. THE UNDERLYING DATA, AND THE INFORMATION PROVIDED HEREIN  
AS A RESULT OF THAT DATA, IS THE PROPERTY OF EQUIVA SERVICES, LLC AND IS NOT TO  
BE THE SUBJECT OF SALE OR EXCHANGE WITHOUT THE EXPRESS WRITTEN CONSENT OF  
EQUIVA SERVICES, LLC.

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ENVIRONMENTAL DATA SHEET

EQUILON EDS: 857475E

AEROSHELL(R) TURBINE OIL 555

TELEPHONE NUMBER:

24 HOUR EMERGENCY ASSISTANCE

EQUIVA SERVICES: 877-276-7283

CHEMTREC: 800-424-9300

GENERAL MSDS ASSISTANCE

877-276-7285

NAME AND ADDRESS



EQUILON ENTERPRISES  
 PRODUCT STEWARDSHIP  
 P.O. BOX 674414  
 HOUSTON, TX 77267-4414

PRODUCT CODE: 60073

# SECTION I PRODUCT COMPOSITION

NO.	COMPOSITION	CAS	PERCENT
P	AEROSHELL TURBINE OIL 555	MIXTURE	100
1	SYNTHETIC ESTER	68424-31-7	0-96
2	SYNTHETIC ESTER	68424-33-9	0-96
3	OCTYLATED N-PHENYL-1-NAPHTHYLAMINE	68259-36-9	1-2
4	P,P-DIOCTYLDIPHENYLAMINE	101-67-7	1-2
5	TRICRESYL PHOSPHATE (MIXED ISOMERS)	1330-78-5	1
6	MINOR ADDITIVES	MIXTURE	<1

# SECTION II SARA TITLE III INFORMATION

NO.	EHS RQ (*1)	EHS TPQ (*2)	SEC-313 (*3)	313 CATEGORY (*4)	311/312 CATEGORY (*5)
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P H-2

- \*1 = REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SEC 302  
 \*2 = THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SEC 302  
 \*3 = TOXIC CHEMICAL, SEC 313  
 \*4 = CATEGORY AS REQUIRED BY SEC 313 (40 CFR 372.65 C), MUST BE USED ON TOXIC RELEASE INVENTORY FORM  
 \*5 = CATEGORY (FOR AGGREGATE REPORTING REQUIREMENTS UNDER SARA 311, 312)  
 HEALTH: H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD  
 H-2 = DELAYED (CHRONIC) HEALTH HAZARD  
 PHYSICAL: P-3 = FIRE HAZARD  
 P-4 = SUDDEN RELEASE OF PRESSURE HAZARD  
 P-5 = REACTIVE HAZARD

# SECTION III ENVIRONMENTAL RELEASE INFORMATION

THIS PRODUCT IS COVERED BY EPA'S COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA) PETROLEUM EXCLUSION. THEREFORE, RELEASES TO AIR, LAND, OR WATER ARE NOT REPORTABLE UNDER CERCLA ("SUPERFUND"). HOWEVER, UNDER SECTION 311 OF EPA'S CLEAN WATER ACT (CWA), THIS PRODUCT IS CONSIDERED AN OIL. AS SUCH, SPILLS INTO OR LEADING TO SURFACE WATERS THAT CAUSE A SHEEN MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.

THIS PRODUCT IS AN OIL UNDER 49 CFR (DOT) PART 130. IF SHIPPED BY RAIL OR HIGHWAY IN A TANK WITH A CAPACITY OF 3,500 GALLONS OR MORE, IT IS SUBJECT TO THE REQUIREMENTS OF PART 130. MIXTURE SOLUTIONS IN WHICH THIS PRODUCT IS PRESENT AT 10% OR MORE MAY ALSO BE SUBJECT TO THIS RULE.

# SECTION IV RCRA INFORMATION

IF THIS PRODUCT BECOMES A WASTE, IT WOULD NOT BE A HAZARDOUS WASTE BY RCRA CRITERIA (40 CFR 261). PLACE IN AN APPROPRIATE DISPOSAL FACILITY IN COMPLIANCE WITH LOCAL REGULATIONS.

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT DATA. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY,



PROCESS, USE OR DISTRIBUTE, AND ARE ENCOURAGED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

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KAREN G. HAYNES

-----  
EQUIVA SERVICES LLC  
P.O. BOX 674414  
HOUSTON, TX 77267-4414

FOR ADDITIONAL INFORMATION ON THIS ENVIRONMENTAL DATA PLEASE CALL  
(877) 276-7285

FOR EMERGENCY ASSISTANCE PLEASE CALL

EQUIVA SERVICES LLC: (877) 276-7283

CHEMTREC: (800) 424-9300

}



Supplier:  
 Permatex, Inc.  
 10 Columbus Blvd.  
 Hartford, CT 06106  
 Telephone: 1-87-Permatex  
 (877) 376-2839

## Material Safety Data Sheet

### 1. PRODUCT IDENTIFICATION

Product Name: PX HI TEMP THREADLOCKER 10ML BO CG  
 Item No: 27200  
 Product Type: Anaerobic

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percent	ACGIH 8 Hr. TWA:	OSHA 8 Hr. TWA:
AROMATIC DIMETHACRYLATE ESTER 24448-20-2	70-80		
MALEIMIDE RESIN 3006-93-7	10-20		
SILICON DIOXIDE, AMORPHOUS 112945-52-5	1-10	10 mg/m3 TWA	6 mg/m3 TWA
HYDROXYALKYL METHACRYLATE 27813-02-1	1-10		
PROPYLENE GLYCOL 57-55-6	1-10		
-DIMETHYLBENZYL HYDROPEROXIDE 80-15-9	1-10		
MALEIC ACID 110-16-7	0.1-1.0		
1-ACETYL-2-PHENYLHYDRAZINE 114-83-0	0.1-1.0		
N,N-DIALKYTOLUIDINE 613-48-9	0.1-1.0		
SACCHARIN 81-07-2	0.1-1.0	10mg/m3 nuisance dust	

### 3. HAZARDS IDENTIFICATION

**Toxicity:** Causes moderate skin irritation. Oral toxicity greater than 10,000 mg/kg. Dermal toxicity greater than 1500 mg/kg. Causes moderate eye irritation.  
**Primary Routes of Entry:** Eye and skin contact, ingestion, inhalation.  
**Signs and Symptoms of Exposure:** Repeated skin contact may cause allergic skin reactions. Skin redness.

Ingredients	Percent	NTP:	ACGIH Carcinogens	IARC:
SILICON DIOXIDE, AMORPHOUS 112945-52-5	1-10	Group 2 - Reasonably anticipated		Amorphous Silica, Group 3: Vol. 68: 1997
SACCHARIN 81-07-2	0.1-1.0	Group 2		Group 3: Vol 73 1999

**Medical Conditions Recognized as Being Aggravated by Exposure:** Preexisting skin disorders.

### 4. FIRST AID MEASURES

**Ingestion:** If swallowed, DO NOT induce vomiting. Keep individual calm. Obtain medical attention.  
**Inhalation:** If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If



**Product Name:** PX HI TEMP THREADLOCKER 10ML BO CG  
**Item No:** 27200

**Skin Contact:**

breathing is difficult give oxygen. Get medical attention.  
Remove contaminated clothing. Wash area with soap and water. If irritation persists, seek medical attention.

**Eye Contact:**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

## **5. FIRE FIGHTING MEASURES**

**Flash Point (°F/C):** More than 200 degrees F. Method: Tag Closed Cup  
**Recommended Extinguishing Media:** Carbon Dioxide, Dry Chemicals, Foam.  
**Special Fire-Fighting Procedures:** Firefighters should wear self-contained breathing apparatus.  
**Hazardous Products Formed by Fire or Thermal Decomposition:** Irritating vapors.  
**Unusual Fire/Explosion Hazards:** None  
**Lower Explosive Limit:** Not determined  
**Upper Explosive Limit:** Not determined

## **6. ACCIDENTAL RELEASE MEASURES**

**Spill Procedures:** Maintain good ventilation. Take up with an inert absorbent. Store in a closed waste container until disposal.

## **7. HANDLING AND STORAGE**

**Storage:** Store below 100 degrees F.  
**Handling:** Avoid prolonged skin contact. Keep away from eyes.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Eyes:** Safety glasses or goggles.  
**Skin:** Neoprene, rubber or butyl rubber gloves  
**Ventilation:** General; local exhaust ventilation as necessary to control any air contaminants to within their exposure limits during the use of this product.  
**Respiratory Protection:** An approved respirator (i.e. NIOSH, etc.) should be worn when exposures are expected to exceed the applicable limits.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance:** Red liquid  
**Odor:** MILD  
**Boiling Point (°F):** More than 300 degrees F.  
**pH:** Does not apply  
**Solubility in Water:** Slight  
**Specific Gravity:** 1.1  
**VOC Content(Wt.%):** 8.1% by weight; 89.9 g/l  
**Vapor Pressure:** Less than 5 mm Hg  
**Vapor Density (Air=1):** Not Determined  
**Evaporation Rate:** Not Determined

## **10. STABILITY AND REACTIVITY**

**Chemical Stability:** Stable at normal conditions  
**Hazardous Polymerization:** WILL NOT OCCUR  
**Incompatibilities:** None known  
**Conditions to Avoid:** High temperatures.  
**Hazardous Products Formed by Fire or Thermal Decomposition:** Irritating vapors.

## **11. TOXICOLOGICAL INFORMATION**

See Section 3

## **12. ECOLOGICAL INFORMATION**

No data available



**Product Name:** PX HI TEMP THREADLOCKER 10ML BO CG  
**Item No:** 27200

### **13. DISPOSAL CONSIDERATIONS**

**Recommended Method of Disposal:** Disposal should be made in accordance with federal, state and local regulations.  
**US EPA Waste Number:** NH - Not a RCRA Hazardous Waste Material

### **14. TRANSPORT INFORMATION**

**DOT (49CFR 172)**

#### **Domestic Ground Transport**

**DOT Shipping Name:** Unrestricted  
**Hazard Class:** NONE  
**UN/ID Number:** None  
**Marine Pollutant:** None

#### **IATA**

**Proper Shipping Name:** Unrestricted  
**Class or Division:** None  
**UN/NA Number:** NONE

#### **IMDG**

**Proper Shipping:** Unrestricted  
**Hazard Class:** None  
**UN Number:** None

### **15. REGULATORY INFORMATION**

**SARA 313 Chemicals:** The following component(s) is listed as a SARA Section 313 Toxic Chemical  
DIMETHYL HYDROPEROXIDE

#### **CALIFORNIA PROP 65:**

This product contains Saccharin. No Prop 65 warning is necessary if this product is used as reasonably anticipated.

#### **TSCA Inventory Status:**

All components of this product are listed (or exempt) on the EPA TSCA inventory.

### **16. OTHER INFORMATION**

**Estimated NFPA Rating:** HEALTH 1, FLAMMABILITY 1, REACTIVITY 1  
**Estimated HMIS Classification:** FLAMMABILITY 1, REACTIVITY 1, HEALTH 1

NFPA is a registered trademark of the National Fire Protection Assn.

HMIS is a registered trademark of the National Paint and Coatings Assn.

**Prepared By:** Denise Boyd **Health and Safety Manager**  
**Company:** Permatex, Inc. **10 Columbus Blvd. Hartford, CT 06106**  
**Telephone Number:** 1-87-Permatex **(877) 376-2839**  
**Revision Date:** 02/03/2001